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Forest Service
Southern Region

The Yazoo-Little Tallahatchie Flood Prevention Project

A History of the Forest Service's Role

Forestry Report R8-FR 8
February 1988

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EXPERIMENT STATION

METRIC CONVERSIONS

1 inch	2.54 centimeters
1 foot	30.48 centimeters
1 mile	1.6093 kilometers
1 square mile	2.59 square kilometers
1 acre	0.4047 hectare
1 board foot (12 x 12 x 1 inch thick, without bark, ¼-inch International Scale)	0.00348 cubic meter

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PREFACE

This is the story of the USDA Forest Service's role in Yazoo-Little Tallahatchie (Y-LT) Flood Prevention Project. From 1948 to 1985, the Forest Service carried on the largest tree planting program that this country has ever known to rehabilitate eroding lands in north Mississippi. Other agencies were involved, particularly the Soil Conservation Service (SCS), but their story is for them to tell.

Several thousand men and women worked on the Y-LT Project, but three men were particularly responsible for its success. Congressman Jamie L. Whitten "adopted" the Project soon after his election in 1942 and supported it with supplemental legislation and funding until it closed. William L. Heard, first as SCS project leader, and subsequently as assistant state conservationist and then as state conservationist led the SCS's efforts and formulated many policies. There was also Victor B. MacNaughton, the Forest Service's project manager, from 1952 to 1967, the years of greatest accomplishment. See figure 1.

Vic was first of all an innovator, always seeking new methods, never satisfied with the status quo. He worked closely with research and adopted its findings quickly. He had the ability to get along with people in all walks of life. This was instrumental in obtaining a high degree of cooperation from all governmental agencies, industrial organizations, and individuals in carrying out the program of land rehabilitation and watershed management. He had the happy faculty of getting the men and women in his organization to pull together as a team. His first rule was always to cooperate.

In preparing this history, we have relied heavily on the Project's annual reports and upon Dr. Michael Namorato's unpublished manuscript "A History of the U.S. Forest Service's Role in the Yazoo-Little Tallahatchie Flood Prevention Project, 1932-1975." Those contributing to its preparation include John Arrechea, Robert Baker, Lee Bardwell, Carl Hoover, Victor B. MacNaughton, Charles R. Myers, John Schombert, Charles Shade, and Billy Page. As principal author, I assume full responsibility for all opinions expressed in this book and for the accuracy of all statements. The credit goes to the men and women who made this history possible.

Hamlin L. Williston
USDA Forest Service (retired)
Oxford, MS 1987

Figure 1.—W. L. Heard, Jamie Whitten, and Victor B. MacNaughton — key men in the history of the Y-LT.

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CHAPTER 1

INTRODUCTION

Mississippi entered the Union in 1817 with a population of less than 75,000 people. Even so, a steady influx of settlers from the East Coast seeking land led to the Treaty of Pontotoc Creek in 1832 with the Chickasaw Indians. Soon, much of north Mississippi had been homesteaded.

When the first white settlers arrived, they found dense, almost, impenetrable forests and deep, clear streams. The better-drained floodplains and level, uplands were cleared first. Pressure for more cropland led to the clearing and plowing of steep wooded slopes. Damaging erosion was inevitable. As early as 1850, the state geologist mentioned severe erosion in the fields of north Mississippi as a serious problem.

The War Between the States marked the end of an era and a way of life. When large plantations were broken up into small farms, the increased number of landowners put even more pressure on the erodible soils. More hillsides were cleared and plowed. The silt and sand kept moving, 100 million tons a year, out of the hills and down into the valleys and stream channels. See figures 2 to 6. After 100 years of exploitative farming, both the land and the people were impoverished.

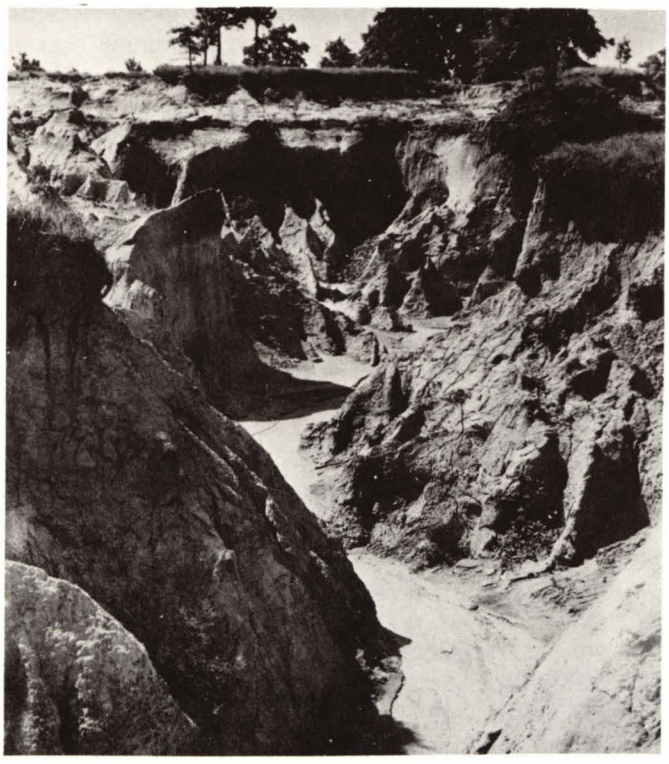

Figure 2.—Gullies such as this were commonplace when remedial work started on the Y-LT.

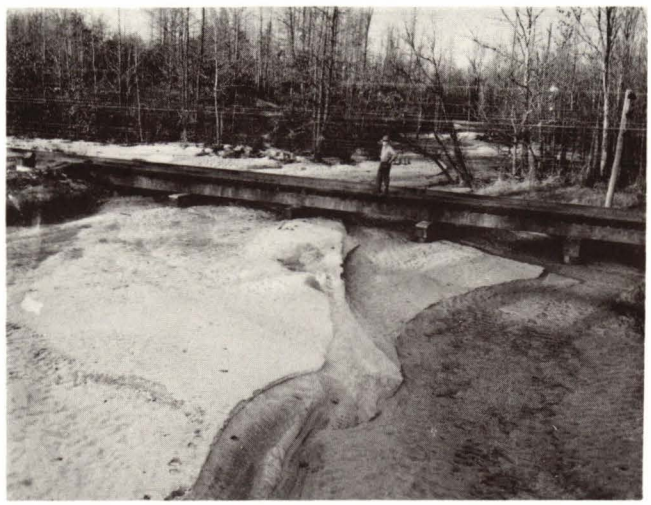

Figure 3.—This railroad bridge had to be raised three times at a cost of $300,000 because sand eroding from the hillsides repeatedly choked the stream channel.

In fact, the Yazoo River Watershed was once the most seriously eroded area in Mississippi. It comprises 5.7 million acres in northwest Mississippi. The western 1.5 million acres are a level, alluvial plain, part of the Mississippi Delta. Since 1947, the remaining 4.2 million acres of rolling uplands have been the work province of the Yazoo-Little Tallahatchie Flood Prevention Project. Four main tributaries — the Coldwater, Tallahatchie, Yocona, and Yalobusha rivers — drain the uplands southwesterly to the Yazoo River. On July 1, 1966, an additional area of 719,797 acres of Delta between the line of bluffs and the Coldwater, Tallahatchie, and Yazoo rivers became an active part of the project.

All or parts of 19 counties are in the Yazoo-Little Tallahatchie Flood Prevention Project Area. After the 1966 expansion, its boundaries included all of Calhoun, Grenada, Lafayette, Panola and Yalobusha counties; most of Carroll, DeSoto, Holmes, Marshall, and Tate counties; substantial acreages in Benton, Pontotoc, Tallahatchie and Union counties; and small portions of Chickasaw, Montgomery, Tippah, Webster, and Yazoo counties. Very little forestry work was done in the Yazoo Flood Plain.

The entire watershed was once an embayment of the Gulf of Mexico and the soils are deposits of sand, clay, and gravel. The western third of the watershed is covered with a highly erosive mantle of

Figure 4.—Even small rains caused minor floods 10 to 15 times each year on this flooded bottomland near Oxford, MS.

loess of Pleistocene Age, varying in depth from 40 feet along the western bluffs to a shallow depth 30 miles east.

Erosion of the loess was dramatic; approximately 50 percent of the area was affected by severe or extremely severe erosion. When the mantle of loess was disturbed by fire, cultivation, or overgrazing, the fine-textured soils tended to "seal over" under the impact of rainfall, thereby limiting infiltration and causing excessive run-off.

When drainage channels eroded through, the loessial cap, underlying sands were washed from the gullies in enormous quantities and deposited on fertile bottomlands. Gullies from 10 to 50 feet deep were prevalent, and almost half of the loessial area was unfit for further agricultural use.

This area has a mild humid climate with long growing seasons varying from 200 to 225 days. Extremes in temperature range from slightly below 0° Fahrenheit to 100°. Mean monthly temperatures vary from 42° in January to 82° in July. Precipitation averages about 52 inches annually, and is generally distributed favorably for farming, although severe summer droughts are not uncommon.

Rainfall is often very heavy. The infiltration capacity of the soil had been so reduced that in some of the minor tributaries less than 1 inch of rainfall caused minor floods. Annual damage from floods and sediment before 1947 exceeded $4 million. Sixty-five percent of the bottomland fields suffered from annual flooding and depositions of sterile sand.

At the time of the Flood Control Survey (1937-1942) there were approximately 1,603,000 acres in woodland; 1,181,000 acres in row crops (mostly cotton and corn) and 1,022,000 acres in pasture or idle. An additional 400,000 acres were in Federal ownership. Average net cash income per farm was just over $500 per year.

The primary concern of farmers was to obtain the greatest immediate return for the least expenditure. Crops of corn and cotton were clean-tilled and the crop stubble offered little erosion protection against the winter rains. Winter cover crops were seldom grown on the clean-tilled areas. When fields were abandoned, vegetation on them was scant and heavily grazed, so these worn-out fields offered little protection for the soil. Some farmers constructed ill-designed hillside ditches that probably increased run-off and soil erosion losses.

Figure 5.—This cornfield covered with sand formerly produced over 100 bushels of corn per acre per year.

Figure 6.—Frequent flooding put this cornfield out of production.

Most of the forests were second growth or stands left after being heavily cutover by loggers. The average annual growth per acre was 62 board feet per acre, much of it in small, poor-quality hardwoods. Frequent fires and uncontrolled grazing had destroyed the ground cover, and discouraged reproduction of the more desirable species.

Flood Control Survey Reports for the Yazoo and Little Tallahatchie Watersheds recommended that a remedial program of waterflow retardation and soil erosion prevention pursuant to the Flood Control Act of 1936 (as amended) be established. The plan approved by the Department of Agriculture called for: (1) a complete fire control system for the watershed; (2) roadbank stabilization (See figure 7); (3) treatment of all land suited for farming on a permanent basis by rotating crops, terracing slopes, treating critical areas, developing pasture, planting trees, improving and managing farm woodlands, and controlling gullies. (This work was to be done by the landowner with financial assistance, material, and other services contributed by the Department of Agriculture); and (4) the purchase of all land not suited to remain in farms and treatment of this land by planting trees, controlling gullies, and improving and managing the forests on a sustained-yield basis.

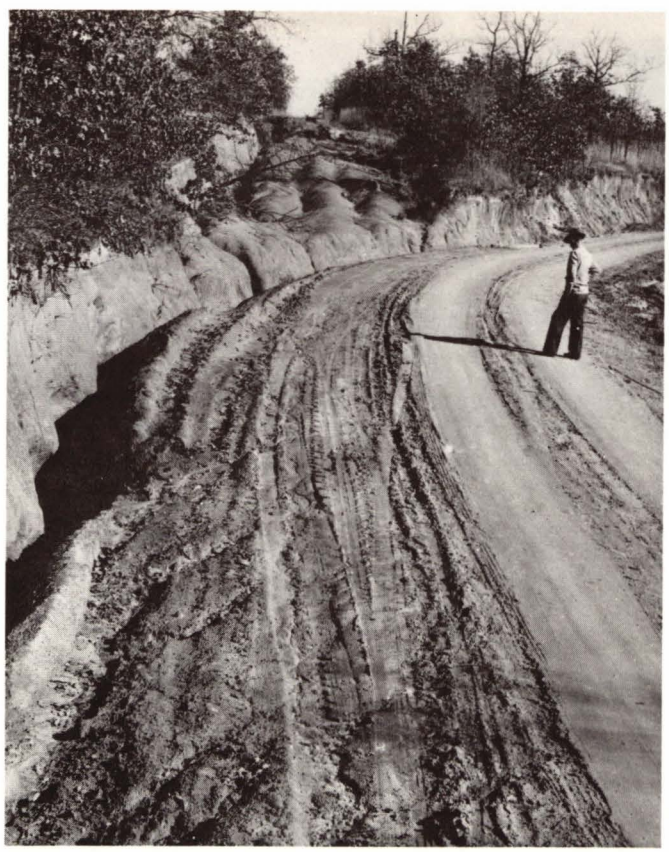

Figure 7.—Roadbank erosion accounts for 12 percent of the sedimentation on the Y-LT Flood Prevention Project.

This history details the Forest Service's role and accomplishments in carrying out the proposed program.

CHAPTER 2

ENABLING LEGISLATION

Starting in 1819, the state of Mississippi, individual counties, and groups of counties built levees to protect cropland from flooding. Despite intermittent assistance from the federal government, however, flooding continued to be a problem. In 1927, a major flood covered 23,000 square miles of alluvial valley land, left 700,000 people homeless, and caused $363 million of property damage. As a result of this flood, the Mississippi Valley Levee and Floodway Program became a national project.

In 1928, the Federal Flood Control Act set up a comprehensive federal flood control program in the lower Mississippi Valley. Instead of rebuilding levees, the law focused on the building of controlled floodways and called for research related to flood control, such as reforestation.

To carry out the research, the law established the United States Waterways Experiment Station at Vicksburg. It also empowered the Secretary of Agriculture to conduct investigations and experiments that determined the best reforestation methods, and to make and keep a survey of all forests and forest supplies in the United States.

While the provisions of the 1928 Flood Control Act were implemented, the Corps of Engineers conducted two flood control surveys of the Mississippi river and its tributaries. Both concluded that a comprehensive flood control program was not economically feasible even though flooding was continuing. Through the efforts of Congressman Will Whittington of Mississippi, a supplemental report on the Yazoo River was commissioned. In light of the recent floods, the engineers changed their opinions and recommended that federal legislation be enacted to implement a flood control program on the Yazoo.

In 1936, PL (Public Law) 738, "An Act authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control and for Other Purposes" was passed. For the first time in flood control history, the federal government had clearly assumed responsibility for protecting the land within the states from the destructiveness of high water levels.

More importantly, the 1936 "Omnibus Act" clarified how this was to be done. Sections 2 through 4, and 6 though 9 placed all investigations and improvements under the jurisdiction of the War Department (Secretary of War and Chief of the Corps of Engineers) while authorizing the Secretary of Agriculture to investigate and supervise the programs concerning watersheds, measures for run-off, waterflow retardation, and soil erosion prevention.

The states, moreover, were given responsibility of providing—without cost to the federal government—all lands, easements and rights-of-way necessary for the construction of the flood control projects; of maintaining and operating such projects. In turn, the states were to receive appropriations for construction purposes with the understanding that such appropriations would be repaid.

For Mississippi, the Omnibus Act specified that floods on the main line of the Yazoo River were to be controlled by a system of four reservoirs in the northern part of the state, with channel improvements all along the river. This included levee construction in certain areas where flooding potential was high. Arkabutla Dam (1943) on the Coldwater River, Sardis Dam (1940) on the Tallahatchie River, Enid Dam (1953) on the Yocona River, and Grenada Dam (1954) on the Yalobusha River were built to control upstream flooding. At the same time, the dams were meant to make the water on the Yazoo manageable through levee systems and channel improvements. In constructing the dams, the Corps was authorized in 1938 to purchase any lands considered necessary. The purchased land thereafter could be rented to individuals with the understanding that the lands could be flooded at anytime if the operation required it.

The Flood Control Surveys of the Little Tallahatchie and Yazoo rivers were authorized by amendments to the 1936 Omnibus Act. These surveys were made under the direction of the Forest Service in cooperation with the Soil Conservation Service and the Bureau of Agricultural Economics headquartered in Oxford, MS. Besides calling for land conservation measures, fire control, and road-bank stabilization, the surveys recommended the purchase of 892,880 acres of submarginal farmland. The two survey reports were submitted in April 1942 and July 1943.

In 1943 and 1944, hearings were held in the House and Senate for the specific purpose of determining what else the Federal government should do concerning flood prevention legislation. During the hearings, serious questions were raised about the amount of land to be purchased, based upon the Little Tallahatchie and Yazoo survey recommendations. There was also genuine concern about the delineation of authority among the federal agencies that would participate in implementing the programs.

As a result of these hearings, the department of agriculture representative, C.P. Barnes, agreed that, although the Soil Conservation Service would supervise the project, the Forest Service would still play a vital role in the program. The final bill contained a provision protecting the state's right of consent before land acquisition could be final.

Congress was convinced that a federal flood control program was essential and on December 22, 1944 passed the second major amendment to the 1936 Omnibus Act known as the Flood Control Act of 1944, PL 534. This amendment established 11 watersheds throughout the United States and authorized the Secretary of War, the Chief of the Corps of Engineers and the Secretary of Agriculture to carry out works of improvement on them. For Mississippi, PL 534 authorized the creation of the Little Tallahatchie River Watershed and the Yazoo River Watershed, with appropriations totaling $4,221,000 for the former and $21,700,000 for the latter.

The 1944 Act was the most important piece of federal flood control legislation in the nation's and in Mississippi's history. Having explicitly committed the Federal government to massive flood control work, it served as a precedent for future legislation. The Act has been amended twice since its passage, first in 1950 and later in 1962, to increase the Secretary of Agriculture's authority for implementing emergency run-off measures and for developing and using water resources within the watershed. The Flood Control Act facilitated extension of the Federal government's responsibility in this area.

In many respects, the Act has also served as the foundation for the Comprehensive Federal legislation of the 1950's and 1960's, especially the Watershed Protection and Flood Prevention Act of 1956 and the pilot project programs for watershed protection. Finally, the Act has provided strong impetus for establishing research facilities throughout the United State, such as the Forest Service's Hydrology Laboratory and the Agricultural Research Service's Sedimentation Laboratory, both in Oxford, MS.

Congress passed the Soil Conservation Act (PL46: 74th Congress) in 1935. This law required that a new agency be formed from existing organizations.

In addition, the Soil Erosion Service at this time became the SCS (Soil Conservation Service), with status as a regular bureau of the Department of Agriculture.

A major feature of the Act stipulated that "The Secretary of Agriculture—from now on—shall coordinate and direct all activities with relation to soil erosion...." To coordinate SCS activities at the local level, the Secretary of Agriculture decreed that "on or after July 1, 1937 all erosion control work in private lands, including new demonstration protects shall he undertaken by the SCS through legally constituted Soil Conservation Associations."

In February 1937, the President submitted to the Governors of all states, a standard State Soil Conservation District Law. This gave farmers and ranchers authority to organize districts, specifically for conservation of soil and water resources. Mississippi's State Legislature passed a Soil Conservation District Act in 1938.

These Federal and State acts provide the SCS with a technical delivery system to every county in a state. Public Law 46, as amended, remains the basic law under which an agency of the Federal government can work with local entities in protecting the nation's land and water resources on private land such as those within the Yazoo-Little Tallahatchie Watersheds.

CHAPTER 3

ROLE OF THE COOPERATING AGENCIES

The Y-LT Flood Prevention Project was officially launched in 1947. Its major objectives, as defined by law and subsequent developments, were the reduction of floodwater and sedimentation damage, proper land use, channel stabilization, and improvement of affected local economies. Congress appropriated funding for the program to the Soil Conservation Service, which then allocated funds for forestry activities to the Forest Service.

Relying on the Soil and Water Conservation Districts for local leadership, the Soil Conservation Service and the Forest Service planned the flood prevention work with local landowners. Acting jointly, both agencies conducted surveys to determine the needs for each of the 54 sub--watersheds into which the Y-LT watershed had been divided. The SCS, however, was given overall program responsibility as well as the authority to plan programs for open land, structures, road banks and channel improvements.

During the surveying stage, the Forest Service was to appraise the forest conditions and determine tree planting and other needs for the woodlands. In addition to both agencies supplying technical assistance to landowners the SCS was also responsible for preparing the conservation plans for individual farms. These plans outlined the land-use adjustment and the treatment objectives for participating landowners.

The conservation farm plan was and is the key to the action plan. The landowner had to have a plan and had to sign an agreement with the Soil Conservation District before any remedial work could begin. The farm plan would identify the soil type of each field and recommend its treatment. It might call for crop rotation, pasture improvement, terracing grassed waterways, diversion ditches, stock ponds, gully plugs, tree planting, woodland improvement, etc. The terms of the agreement are as follows. First, the landowners agreed

1. To use available conservation planning assistance from the District progressively to make and record acceptable decisions on how they will use and treat all of their land, water and plant resources as rapidly as circumstances will allow.

2. To carry out such a mutually acceptable decision as rapidly as their resources and the help available to them from the District will permit.

3. To comply, in carrying out the recorded decisions, with any applicable state laws governing the beneficial use of water.

4. To maintain all structures and other conservation measures which the District has helped them put into effect on their land.

5. To pay the rate established by the District governing body for the use of rental equipment furnished by the District at their request for use on their land.

6. To use any conservation material furnished to them by the District for the purposes and in the manner specified in the recorded decisions in the conservation plan folder for their operating unit.

7. That in the event materials supplied to them by the District are not used by them for the purpose specified in the record of the decisions for their operating unit, they will replace the materials in kind or reimburse the District for the value of such material.

8. That the members of the District governing body or their representatives will have the right of ingress or egress to the landowners' operating unit during the period of this agreement for the purpose of conducting surveys, planning, installing or inspecting conservation measures or structures.

In return, the District agrees

1. To supply a soil map with interpretation, where needed, of the cooperator's operating unit.

2. To furnish available technical assistance, to provide the type and amount of conservation planning and application assistance needed or desired by the cooperator for his or her operating unit.

3. To supply, in accordance with the provisions of the recorded decisions, equipment, services, and materials as are available from the District and as are requested by the cooperator for carrying out his or her decisions.

4. That the technical assistance available to the District may be used in providing conservation planning decisions reached on land use and treatment needs as to meet changing conditions.

It is mutually agreed:

1. That neither the District nor the cooperator will be liable for damages to the other in connection with the installation of structures or other conservation measures unless such damages are caused by negligence or misconduct.

2. That in the event of the sale of the operating unit neither the cooperator nor the new owner will be obligated to carry out the provisions of this agreement. However, the cooperator agrees to inform the new owner of the existing cooperative agreement for the operating unit and to advise him or her of assistance available from the District in connection with it.

Once the plan and the signed agreement were received, the Forest Service could assist the landowner with planning the necessary tree planting, hardwood control, timber marking, firebreak construction, and management recommendations on those areas designated as forestland on each farm plan.

The ASCS (Agriculturalal Stabilization and Conservation Service) administers the ACP (Agricultural Conservation Program), an annual cost-sharing program, which shares with rural landowners the cost of applying conservation measures to prevent or abate environmental pollution and conserve the land and related resources. Y-LT Project foresters worked closely with the ASCS to obtain cost-sharing for tree planting and timber stand improvement on lands where erosion and run-off were not serious enough to warrant treatment at full government expense. Many thousands of acres were reforested under the ACP Program, which also shared costs for construction of firebreaks planted with wildlife food.

In addition, the Mississippi Forestry Commission's primary objective was to prevent, discover, and control fire in the forests and fields of the state. As the pine plantations grew, the commission cooperated actively with the Y-LT project foresters in preparing forest management plans and in marking timber for cutting.

There was also an ongoing information and education program to "sell" landowners on the benefits and returns obtainable from placing their forestlands under management. The Mississippi Extension Service, with its county agents and extension foresters, the Mississippi Forestry Commission, and the Mississippi Forestry Association all helped the Forest Service and the Soil Conservation Service to promote conservation.

The Farmer's Home Administration provides loans to farmers for farm ownership, farm operations, rural housing, and other needs. Where farm woodlands were such that they could contribute substantially to farm income, Y-LT project foresters were often called upon to prepare a forest management plan before the loan would be approved. This effort frequently resulted in the identification of land that needed planting with pine.

Also, the Corps of Engineers administers 282,000 acres within the Project area. About 184,500 acres of this is the flood control pool area, that is, land that would be under water at peak flooding. Some of the remaining land is rented for the production of agricultural products, but the largest portion is managed for timber, wildlife, and recreation as mandated by Congress. On these areas, the Corps planted the eroding land with pine and stabilized the roadbank.

Moreover, there are about 142,000 acres of National Forest land within the Project. Here, eroding areas were planted with pine and the roadbanks stabilized. But perhaps the National Forest's greatest contribution was its fire control organization, which would fight fire on any private lands within or adjacent to the Forest's boundaries if federal land was threatened.

Each county is governed by a board of five "Beat Supervisors." These supervisors assisted the Y-LT Project by levying a 2 cents per acre tax for fire control and by stabilizing the roadbanks along the county roads. Their support frequently improved the attitudes of landowners towards the planting program.

The key to the success of the Project was cooperation — always present and never failing.

CHAPTER 4

ORGANIZATION AND PERSONNEL

USDA Forest Service personnel first worked on the Y-LT Project in February 1948, with Larry Newcomb as project manager, Frank Mayfield as assistant project manager, and Brook Davis as project forester. All three were stationed in Oxford, MS. The project manager had an office in the City Hall with a part-time clerk. Davis had a desk in the Soil Conservation Service's District office. Oxford remained the project manager's headquarters throughout the life of the Project. At one time or another project foresters were assigned to 18 Soil Conservation Service District offices located in or directly adjacent to the Y-LT Project area. Their duties were specified in a "Gully Ranger's Handbook" prepared in 1952 by Don Gerred, the assistant project manager at that time.

As the Project grew in size and complexity, the project manager's staff expanded to include a timber management assistant with staffing in watershed planning: information and education; wood utilization; purchasing; and personnel management, including a fiscal clerk, clerk-typist, and an administrative assistant.

The project foresters were first assisted by aids and technicians. But as the forest management load increased, a clerk and another forester were added where and when the workload was particularly heavy. In 1956, near the peak of the planting effort, there were 15 project foresters working in the SCS District offices.

The Y-LT Project offered a challenge and new experience to the Forest Service. For the first time Forest Service personnel worked with state, county, and other federal agencies in carrying out a treatment program on private lands. Little was known of the momentous task of promoting land conservation, especially pine tree planting, to the private landowner in rural north Mississippi. The landowners were generally suspicious of the "Feds" (Forest Service employees), especially if the foresters were from up North, "Yankees." These landowners were often not receptive to anyone promoting Federal programs for application on their land.

The Forest Service's major responsibilities were on forest lands, but the agency also served as a backup to the Mississippi Forestry Commission in forest fire control. Both the Forest Service and the Soil Conservation Service had signed Memorandums of Agreement with existing Soil Conservation Districts. Mississippi Forestry Commission had also signed a Memorandum of Agreement with the SCD Districts as well as a Memorandum of Understanding with the SCS.

To bring the needs and interests of the individual landowner fully into the program, the SCS prepared a Conservation Farm Plan. After receiving a copy of the Farm Plan, the project forester contacted the landowner to discuss and confirm the extent and type of forestry work to be done. Each project forester planned the forestry work on 100 to 250 farms each year. Obviously, close working relationships and cooperation between the Forest Service, SCS, Soil Conservation District Commissioner, ASCS, and the landowner were essential to the success of these plans.

For the first 15 Years, tree planting was the primary job for the project foresters. As the number of trees to be planted each year increased from a few hundred thousand to a peak of 50 million in 1959, there was a corresponding increase in number and type of Forest Service personnel. During the first decade the project foresters were older, with both World War II and National Forest experience. They were more experienced in dealing with adversity than their counterparts who followed.

Furthermore, the job of managing and coordinating the programs on the units became extremely difficult because of the rapid rotation of foresters on and off the project. It was especially frustrating to landowners in carrying out their farm plan and also to the Soil Conservation Service in trying to coordinate the land treatment program. For these reasons, in 1954 a policy was set that required the forester to remain in the Project for at least 2 years. This policy helped to establish continuity throughout the forestry program.

An excerpt from the Planting Report of FY 1959-60 shows the magnitude of the planting job. "Twelve project foresters, thirteen full time forestry aids, forty-four temporary aids, plus some 600 tree planters made up the Forest Service Army which planted or supervised the planting of nearly 46 million seedlings this season. In addition, there were 75 ACP vendor crews with an estimated 1,138 planters. Thus in a given week — December through March — there were well over 1,000 people engaged in tree planting."

Intensive training and a close working relationship with the Tallahatchie Research Center (now the Forest Hydrology Laboratory), a branch of the Southern Forest Experiment Station, improved the technical performance of the entire forestry program. Later, the Project received not only national but worldwide recognition.

Consider another question from the 1959-60 Planting Report: "Last September the Oxford Chamber of Commerce sponsored a special edition of the *Oxford Eagle* in which they proclaimed Oxford the Reforestation Capital of the World." Subsequent articles in the 1960 Christmas issue of the *Southern Landowner* and the January 1961 issue of the *American Forests* magazine gave regional and national publicity to this claim.

Since the major responsibility of the Forest Service was planting trees on land that had been approved by the SCS, there was little need at first for full-time employees year round. But as the role of the Forest Service expanded, full-time forestry technician positions were created. The increase in workload was due to added requirements in planning by the SCS and the expanding role of the Forest Service in the protection and maintenance of plantings.

The first forestry technicians were employed on each unit in late 1954. One forestry aid was selected from each unit to work full-time and was promoted to forestry technician (GS-5). The aids selected had been alternating their work between the SCS and the Forest Service. They had previously been laid off at the end of the planting season and would not be employed again until the start of the following planting season.

The employment of the forestry technicians provided continuity in the work on the units and helped solve many problems associated with coordinating the land treatment program. The technicians were familiar with the work of both agencies and were known and trusted by the people in the county. As more and more responsibility was placed on technicians, they became a key contact not only for landowners, but also for the other agencies that dealt with the Forest Service. The foresters, taking their cue from technicians, found that, with a slow and easy approach, the open and courteous nature of the Mississippi landowners would take over. They would listen to a Yankee forester and accept both him and his ideas.

Forestry technicians, in contrast to the professional foresters, made a career of their work on the Y-LT. One-hundred and fifty foresters served on the Project, with an average stay of a little over 2 years. Meanwhile, 37 employees have held the title of forestry technician. By the close of the Project in 1985, 21 had retired, 6 had been promoted to forester and transferred to national forests, 3 transferred to the national forests, 5 died while still employed, and 2 resigned. Many technicians worked long enough to thin plantations that they had been instrumental in planting. A list of all those who worked on the Y-LT is included in appendix 2.

The dedication of forestry technicians to the work and goals of the Project can be seen not only by their tenure, but also by the fact that many worked years after they were eligible to retire. And some retired only when their jobs were phased out.

An administrative assistant position was created in the Project Manager's Office in 1956. With this position located on the Project, many duties and responsibilities formerly performed by the Supervisor's Office in Jackson were delegated to the Project. In 1961 supervision of the Project was transferred from the Forest Supervisor's Office in Jackson, MS to the Division of State and Private Forestry in the Southern Region Office in Atlanta, GA.

As the tree planting workload decreased in the mid-Sixties several plans were drawn up for phasing out the Project. Efforts were increased to get as many of the Y-LT plantations as possible under a management program and to educate landowners and the public on erosion control measures.

Early in the l970's, it was recognized that employees on the Project — when it closed — would have to transfer, retire, or lose their jobs. A decision was made not to employ any more forestry technicians, but to hire forester trainees to fill vacancies as they occurred. The nature of the remaining work involved a professional knowledge of forestry and could be handled better by a professional forester. Foresters were hired with the understanding that they would spend from two to three years on the Project and transfer to other positions in the Forest Service.

Seventeen forester trainees were rotated through the Project. Four were first employed as forestry technicians, while continuing their education at Mississippi State University in Starkville, MS. Two were hired through the Cooperative Education Program. One was hired through Mississippi State University and one through Clemson University.

The Y-LT Project has served as a training ground for Watershed Management. It would be difficult to visit anywhere in the Forest Service's Southern Region and not find someone who had either begun their career on the Y-LT or had worked on the Project. The list would include staff directors and specialists in the Regional Office, forest supervisors, district rangers and others in various positions throughout the Region.

As the years passed, the number of seedlings planted each year decreased until planting was concluded in 1982. In fact, the work program in the 1970's had developed into one of timber manage-

ment — with pine plantation management the major job. By 1983, there were no longer any project foresters and only six full time forestry technicians on the job. With the improving economy, the abundant labor force present in the 1950's had almost disappeared.

Human Resource Programs

The Y-LT Project has provided education, training, and conservation work experience in a number of manpower training programs funded under the CETA (Comprehensive Employment Training Act). The purpose of the programs were to:

1. Aid economically disadvantaged youths.

2. Help alleviate the Nation's youth unemployment problem.

3. Accomplish needed conservation work on public lands.

These programs have included the NYC (Neighborhood Youth Corps), the YACC (Young Adult Conservation Corps), the Governors "Stay in School Program," and "Operation Mainstream."

In early 1976, the Project was selected by the Department of Commerce to participate in the Job Opportunities Program, Title X of the Public Works and Economic Development Act. The selection was made based on the high unemployment rate of the counties (20 percent) and the quality of the work projects submitted. The program provided employment for a crew of 21 men for a period of 2 years on conservation projects in Holmes County.

The Project also participated in the Senior Community Service Employment Program, administered under Title IX of the Older American Act. This is a cooperative program with the Department of Labor for economically disadvantaged older citizens. The older American enrollees assisted in the supervision and training of younger workers, especially in the YACC Program. The enrollees' knowledge, patience, and expertise added greatly to the YACC Program.

The YACC was the largest of the programs. It was administered by the Y-LT in cooperation with city, county, State, and Federal agencies to carry out conservation projects on public lands. These were needed conservation projects that could not be carried out by the different agencies. The project lasted over 4 years and provided employment and training for over 600 young men and women. The results of their work will be seen and enjoyed by thousands of people for many future years. The projects in cooperation with city, county, State and Federal agencies have provided recreational opportunities, improved the quality of local resources, promoted public safety, and established protection for valuable soil, water, timber, and wildlife resources.

Cooperative Agreements

The emphasis for the Project in the "phase out plan" was that of technology transfer. It was recognized that the job of maintaining the Y-LT plantations could not be assumed by any one agency. The question was no longer who could best handle the services provided by the Y-LT after they were gone, but how could the Y-LT best transfer the watershed management knowledge gained over the past 40 years to landowners and other cooperative agencies.

The Mississippi Cooperative Extension Service could best reach the greatest number of landowners and cooperative agencies. A cooperative agreement with Mississippi State University under the IPA (Intergovernmental Personnel Act) of 1970 was signed in August 1981 to establish a comprehensive Extension Forestry Program for the Y-LT Area. The agreement called for the assignment of a Y-LT forester to the Extension Service with the responsibility for coordinating an education program emphasizing maintenance and protection of established forestry practices on the Y-LT Project Area.

Attitudes and Morale

Contributing greatly to the success of the Y-LT Project were positive attitudes and consistently high levels of morale. While some of this spirit was certainly self-engendered, most of it had its source in the project leadership. Here again, as in so many other facets of the Project, is the indelible imprint of Vic MacNaughton.

The widespread and long-lasting influences exerted by this individual resulted from his strong personality coming into Y-LT at a critical period in the life of the project. Taking over as the third project manager in the fall of 1952, MacNaughton, who served as the project leader for 15 years, provided continuity during the phenomenal growth period of the project making it inevitable that this man should leave so many lasting marks.

Virtually all of the professionals who were assigned to the project came from the National Forest System. They faced an abrupt change because they had not formerly worked so extensively with and through other agency representatives and private landowners. Their Y-LT Project assignments forced them to serve on private lands with little or no subsequent control, which came as a cultural shock to most of them. There was also a certain amount of good-na-

tured banter from peers as to the particular reason for their "banishment to the project."

And yet, all felt the pervading atmosphere of excellence and "can do" emanating from the project manager to the lowest paid forest worker. Most people quickly responded to this upbeat influence, and few left the Project without a deep sense of pride and accomplishment and a greater awareness of their own potential for excellence. Inevitably, both the Project and the Forest Service were beneficiaries of these attitudes.

This high level of morale and esprit de corps that thrived on the Project were fostered by a sense of "family" extending to all employees. This togetherness was seen in such things as newsletters about unit activities and personnel, social activities, and immediate and heartfelt response to emergency needs of fellow workers and their families.

This setting created in the foresters and other Project personnel a genuine zeal toward their work. Having dedicated their careers to conservation, often with lofty ideals, most foresters who came to the project were appalled by the damages sustained by the land as the result of ignorance, neglect, and mismanagement of the basic resources.

It would not have been terribly surprising if they had been simply overwhelmed by the sheer magnitude of the job before them, particularly in the early years when there were so few positive results from which to draw hope and assurance. And yet, it didn't work that way. It was seen as a tremendous challenge. New employees were assured from their first day on the job until the day they left the Project that the job not only could be done, but it would be done. Moreover, managers stressed that all workers' personal contributions were going to have a significant effect toward completing the total job.

A further characteristic that the Forest Service brought to the Project was that every employee would function better and contribute more if they understood how their work helped achieve Project goals and objectives. This understanding was developed to a high level with project forester's meetings, training sessions, secretarial field trips, safety meetings, field days, and on-the-job training. This way, each employee came to identify with the Project's needs. Not only did this result in improved individual output, but it also helped a number of clerks and forest workers to convince certain reluctant landowners to cooperate in the rehabilitation program.

It would be interesting — and perhaps startling — to know the full extent of overtime donated by Project personnel before the days when it became mandatory to justify, document, and reimburse for overtime work. Professionals particularly, as well as many of the aids and technicians, were fully committed to doing whatever it took to get the job done. For example, seedling shipments were checked in at all times of the day and night. Particularly in the boom years of planting Y-LT Project personnel sacrificed long days, weekends, and even holidays to get the trees in the ground. Much of the information and education job of speaking to groups, showing slides, and video programs, taping, or doing live radio and television programs, and writing news articles was done outside of regular workhours.

A lot of the overtime was the source of good-natured complaining, which only partially concealed a sense of pride. One forester expressed the sentiments of all by saying, only partly in jest, that he didn't mind the overtime so much, but he did object to having it scheduled. and yet, the truth of the matter is that the bulk of this overtime was self-imposed and willingly accepted as being part of the job.

Gone are hundreds of foresters and technicians and several thousand laborers who carried out one of the most massive reforestation and erosion control programs in the history of the United States. They take with them memories of a Conservation Camelot unique in America's conservation efforts. Their contributions remain and those new forests may be their finest monument. However, the Soil Conservation Service, Soil Conservation Districts and the Mississippi Forestry Commission will still be in place to work with landowners on their forestry problems. The Corps of Engineers will still manage the four reservoirs, and the Holly Springs National Forest is still in business.

CHAPTER 5

WATERSHED PLANNING

The SCS recognized very early that efforts should be concentrated on limited subdivisions of the Yazoo Watershed. As a first step, the entire area was broken into units of 250,000 acres or less. These were called sub-watersheds. There were 101 of them, 64 in the Yazoo, and 37 in the Little Tallahatchie. For planning purposes, each sub-watershed was further subdivided into tributary units called minor watersheds.

Before actual remedial work could be started in a sub-watershed, the unit had to be "activated." Before 1955, this was done by the SCS Project Office in New Albany, MS. Each year, this unit arbitrarily selected priority sub-watersheds in each county where intensive work was started.

Local SCS District personnel provided basic inputs such as soils maps, present and projected land use, and recommendations for vegetation treatments, gully plugs, and limited on-farm engineering practices. At this point, no multi-farm channel work or floodwater retarding structures were planned. During this period, there were no inputs from the Forest Service or from the landowners. Upon completion, the plan was submitted for approval at various levels of the SCS and finally by the Soil Conservation Districts concerned. Upon approval by the Districts, the sub-watershed was fully activated, and the expenditure of funds for installation was then authorized.

From this point on, and particularly during the first year after activation, SCS District personnel tried to sign up landowners, and to prepare as many farm plans as possible in the sub-watershed. It was at this time that landowners' preferences were sought and considered, as well as the needs of the land. The original planning was altered as necessary to meet the needs and desires of landowners while still adhering to the principles of good conservation.

It was at this point, too, that a Forest Service Y-LT project forester began working with landowners, either separately or in conjunction with SCS personnel after they prepared the farm plan. An approved sub-watershed work plan and an individual farm plan agreement signed by the landowner were required before flood-control or erosion-control could be funded.

This was the general procedure for sub-watershed planning and activation before the inception of the Small Watershed Program in 1955 (PL 566). PL 566 was an outgrowth of the experiences of the Flood Prevention Program and the subsequent Pilot Watershed Program. The 1955 program tended to systematize the entire planning and installation procedure. Internal policy was heavily influenced by the procedures spelled out for the new program, although this legislation had no legal bearing on the Flood Prevention Program.

Several innovations required by PL 566 were adopted by the Y-LT Program. First, activation of a sub-watershed unit had to he initiated by a formal request of concerned landowners. Also, watershed landowners had to form a legal sub-unit of state government capable of assuming legal and financial responsibilities. Additionally, as a result of the legal organization, engineering works of improvement involving multiple ownerships could be cost-shared and installed. Finally, the Forest Service would provide forestry input for the watershed work plan.

One immediate result was the establishment of a watershed planner positon in the Forest Service's PMO (Project Manager's Office), with the planner serving as the forester on an otherwise all-SCS multidiscipline watershed planning group.

From FY 1955 on, sub-watershed planning on the Y-LT followed the same general pattern prescribed for the PL-566 Small Watershed Program. Briefly, that procedure was as follows:

(1) Interested landowners within the watershed boundary formed an ad hoc organization which submitted a formal request for assistance to the state conservationist. This request described the watershed and the local perception of its problems.

(2) The request was reviewed at the SCS state level, assigned a priority, approved for planning as warranted, and referred to the watershed planning group. The Forest Service PMO and local SCS were also notified.

(3) The ad hoc group went through the formal procedures of forming a Watershed District (a legal sub-unit of State government empowered to assume legal and financial responsibility for subsequent steps in the Flood Prevention procedures in that watershed).

(4) SCS District and Area personnel determined soils, land use and recommended treatment for watershed areas. Planning group members began their own investigations in the areas of engineering, hydrology, and economics. Forestry investigations were also begun at this time by the PMO staff watershed planner.

(5) The findings and recommendations of each of the disciplines were gradually brought together in the Watershed Work Plan. In general, sections were devoted to a description of the watershed and its component parts and quantification of watershed problems and needs. There were also sections on the projected future of the watershed under a condition of no accelerated treatment along with a description and quantification of a recommended program of treatment. Additionally, there was a description and quantification of the benefits to be derived from the installation of the proposed measures. Also included were a series of tables concerned with the details of each of these sections as well as specifications for all major engineering work.

(6) At several stages of completion, the draft work plan was submitted for review and comments to the sponsoring Watershed District and the SCS and Forest Service. Meetings with local sponsors and concerned landowners were held by agency

representatives to obtain local input and to promote understanding and acceptance.

(7) With final approval at all levels of the SCS, Forest Service, and the sponsors, the document was signed by representatives of the SCS and the sponsors. The signing made the plan official and empowered the SCS and Forest Service to obligate and expend funds for implementation of the plan.

(8) As was true in earlier stages, the initial step of installation involved preparation of a farm plan by SCS personnel (and, at times, Forest Service personnel) working with landowners/operators. Use of Flood Prevention funds for technical assistance and cost-sharing for installation was authorized only for specified practices in an approved farm plan.

Although the format of the farm plan was often revised over the years, one principle remained consistent. This was the stipulation that the landowner agreed to "Maintain all structures and other conservation measures which the District has helped me put into effect on my land."

Major Forest Service involvement began with Step 4 of the precedent list. Along with notification that the watershed was approved for planning, SCS provided the PMO staff watershed planner with watershed maps, acreages of present and planned future land use. The Forest Service also received needed data on areas to be cleared for crops and pasture, and severely eroding areas to be planted to trees. Aerial photography was available at the county level.

The Forest Service planner's responsibility was to prepare a narrative and a tabular report of the forest resources of the watershed. Those reports included a description of present resources; a projection of future resources assuming no program acceleration; a description of the problems and needs of the forestland; a proposed forestry program to address those problems and needs; and a discussion of impacts of the forestry program on all aspects of the watershed. This latter also included impacts of the other phases of the proposed watershed program on the forest resource.

Much data for this forestry contribution to the Watershed Work Plan came from a field sampling procedure. Data were collected at 50 randomly selected points located throughout the forested portions of the watershed. When completed and reviewed at the Regional/Area level, the forestry contribution was submitted to the SCS to be included in the total Watershed Work Plan.

CHAPTER 6

TREE PLANTING

The CCC (Civilian Conservation Corps) activities in north Mississippi from 1934 to 1942 provided a timely prelude to the Y-LT's tree planting program. Many landowners became acquainted with the benefits derived from planting trees on eroding land. Men who had planted trees for the CCC later became Soil Conservation Service aids or vendors who did contract tree planting and timber stand improvement.

Critical Area Designation

The SCS personnel designated critical areas in the farm plan. A critical area is one which has little or no vegetative cover. Erosion is active and is damaging stream channels and bottomlands. Land immediately adjacent to active gullies will be treated as critical area. Other associated factors were slopes over 8 percent and land capability of class 7 or lower.

Where this type of land was scheduled in the farm plan for tree planting, the entire cost was borne by the Federal government. Abandoned and gullied hillside fields were typical critical areas.

Another type of critical area was defined in 1964 and qualified for 100 percent cost-share by the Federal government. These areas were on the upper slopes and ridgetops covered with a partial stand of defective hardwoods. Tree planting on these areas was known as conversion planting. Some criteria for these areas as described in 1966 were:

- Ridgetop and upper slopes of predominantly loessial soils;
- Primarily stands in which at least 75 percent was blackjack, post oak, or other undesirable species;
- Active sheet or gully erosion was present;
- Little or no ground cover to prevent erosion;
- Less than 600 stems 2 inches and larger per acre;
- Land largely in capability classes VI and VII. Side slopes 10 percent or greater characterized the area.

After the trees were planted, Y-LT crews deadened the low-quality hardwoods to provide growing space for the planted seedlings.

Beginning in 1969, the criteria for critical area tree planting began to change with several modifications issued by the SCS over the next several years. For example, conversion-planting criteria were modified so that 80 percent or more of the tree species had to be blackjack, post oak, or other undesirable woody growth. A further modification, dated January 1970, specified that planting on eroding land less "critical" than that described earlier should be cost-shared with Federal funds not to exceed 65 percent (later changed to 80 percent). This policy does not appear to have affected Y-LT operations until 1972. At that time, a further modification was made concerning conversion planting, so that critical areas planted at 100 percent Federal expense had to be open land with less than a 10-percent cover of woods. The landowner was required to pay 20 percent of the cost of converting critical areas on which scrub hardwoods covered more than 10 percent. This was a drastic modification from the earlier criteria.

On August 23, 1976, Watershed Memorandum MS-3 (Revision 2) was issued by the Jackson office of the Soil Conservation Service. It further tightened up the requirements for conversion planting. Areas eligible for conversion at 100 percent Federal expense had to have gullies on more than 20 percent of the area and consist mostly of gullied land in Capability Classes VI and VII. In addition, up to 80-percent Federal funds could be obligated for stabilizing less severely eroding areas producing substantial off-site damage from run-off and sediment. Sheet erosion usually predominated on these areas although some small gullies were often present. Land eligible for tree planting could have little or no ground cover, and land In Classes I, II and III (good cropland) was excluded.

Critical Area Contract and Force Account Planting Crews

Tree planting got off to a slow start on the Y-LT. For example, only 316 acres were planted in 1948, followed by 1,574 acres in 1949, and 4,373 acres in 1950. Most of this early planting was done by the SCS using contract crews. Because few staff personnel were available, this appeared to be a good approach to use. But, unfortunately, the quality of tree planting was poor. It became evident that contract crews needed supervision, and aids were hired and assigned to these crews to see that the seedlings were correctly planted.

The Forest Service began to take over the tree planting in 1951, and used the same approach as the SCS regarding contract crews. The tree planting budget was small, and the number of aids hired to supervise the crews was inadequate at first. By 1954, however, this situation changed and GS-3 grade aids were being hired on 180-day appointments.

Because of the problems with contract planting crews, the Forest Service began to hire its own employees to form planting crews in 1954. This was known as "force account" planting. Contract planting was deemphasized although it continued to some degree until 1967. Force account planting had the following advantages:

- -- Each tree planter was paid at least the minimum wage.
- -- Poor tree planters were easily identified and dismissed.
- -- The incentives to hide or lose seedlings were reduced.
- -- Local men and women felt they were sharing in the benefits of the program. See figure 8.
- -- Better quality planting was obtained.
- -- Local farmers were employed.

Force account planting peaked in 1961 but continued as the most effective system until tree planting ceased in 1982.

Roadbank Stabilization

Roadbank stabilization with trees was included in the force account tabulation of trees and acres planted although reimbursement was received for some of this planting. The Highway Department or the Board of Supervisors first sloped, seeded, fertilized, and mulched the banks. Project crews would then plant the trees. This practice started in 1961 and continued through 1981 with a total of more than 8,000 acres of trees planted.

Agricultural Conservation Program Planting

The ACP (Agricultural Conservation Program) made a tremendous contribution to the Y-LT Project. From 1948 to 1975, nearly 225,000 acres were planted under ACP. The ACP was authorized in 1936 as a conservation program oriented basically at reducing soil erosion. Tree planting was one of the Program's approved practices. The ACP was already in place when the Y-LT Project was authorized; and therefore, many acres were planted under this program while the Forest Service and SCS were gearing up under the Flood Prevention Program. The peak year for ACP was in 1959 when 24,260 acres were planted to

Figure 8.—In Calhoun County, a female tree-planting crew was organized.

stop erosion. Thereafter, the acres planted under ACP declined each year, and 1975 was the last year of ACP tree planting on the Y-LT.

Under the ACP, landowners applied to the County ASCS for cost-sharing assistance to implement conservation practices on their lands. ACP cost-shared up to 90 percent with participating landowners. Strong local support for the Y-LT Project was evident in the large amount of ACP funds these county committees allocated to tree planting. Nationally, tree planting was a small part of the ACP (less than 5 percent). On the Y-LT watersheds, however, some of the ASCS committees approved up to 50 percent of the ACP funds for tree planting. Lafayette County allocated 52 percent in 1958 to tree planting, the highest percentage in the Nation.

Each project forester served as an adviser to the county ASCS committee, provided the trees free (their value was subtracted from the landowners' cost-share), helped supervise the tree planting, and inspected the job after completion. The availability of ACP vendors decreased in the late 1960's. To fill the void, Y-LT force account crews banded together near the end of the planting season and did ACP planting.

Forestry Incentives Program and the Mississippi Forest Resource Development Program

With the advent of the FIP (Federal Forestry Incentives Program) in 1974 and Mississippi's FRDP (Forest Resource Development Program) in 1975, ACP planting stopped after 1975. FIP and FRDP cost-shared at 75 percent for tree planting and timber-stand improvement. Both of these programs were administered locally by the MFC (Mississippi Forestry Commission) and the acreage planted are included in MFC column in table 8. (See appendix 1.) The primary purpose of these two programs is timber production instead of reducing soil erosion, but many of the acres planted on the Y-LT under these programs were eroding severely.

Planting without any Financial Assistance

A surprising amount of tree planting was done on the Y-LT without any financial assistance other than the provision of free seedlings. Some of this was done by large, affluent landowners who had farm labor available during the winter. Some was done by forest industry on land covered by a Conservation Farm Plan. Some was planted by organized groups, as in 1953 when the 4-H Clubs, Boy Scouts, Future Farmers of America, and schools set out 350,000 trees. And some, known as "Good-Will trees," were planted by landowners who just planted a few pines around their yard. In 35 years, 52,000 acres were planted without assistance.

Tree Planting by Other Agencies

Other organizations were also responsible for planting trees within the Y-LT Project area. The Holly

Springs National Forest planted 54,000 acres; the Corps of Engineers over 17,000 acres; the Forest Hydrology Laboratory over 800 acres; and forest industry planted over 85,000 acres. The Mississippi Forestry Commission planted 56,000 acres on small ownerships and 16th section lands ("school lands"). And from 1978 through 1982, the YACC (Young Adult Conservation Corps), funded by the Department of Labor but under the supervision of the Y-LT, planted 6,600 acres on publicly owned land, largely school lands.

Summary

Over a period of 35 years of tree planting a grand total of 835,893 acres were successfully reforested within the Y-LT Area utilizing over 918 million tree seedlings. See tables 7 to 9 in appendix 1.

After a slow start, the rate of planting increased as the Forest Service organization built up and the interest of landowners in tree planting increased. This buildup in acreage increased until all the "easy" and larger acreages had been planted. Then planting acreage decreased as more efforts were directed at bringing the less-interested landowners into the program with smaller tracts of critical areas. This pattern held true for those acres planted using the Y-LT Flood Prevention funds (force account 100 percent and force account less than 100 percent).

Species

From the very start, loblolly pine was accepted as the species for erosion control planting on the Project. This choice was based upon the CCC experience and experimental plots maintained by researchers. Loblolly grows rapidly during the early years and produces an abundance of needle litter. Yet, because shortleaf was the only pine native to the northwestern half of the Y-LT, many landowners during the early years insisted on having shortleaf planted on their land. Shortleaf was not as effective as loblolly because it grows slowly and does not produce much needle litter during the first 5 years.

Black locust, planted for erosion control in other areas of the country, was a failure on the Y-LT Project. A great many conifers besides loblolly were tried, but only Virginia pine showed any promise. Because it retains its lower branches pulpwood cutters generally left Virginia pine to stabilize the gullies while clearcutting loblolly and shortleaf pine.

Nurseries

Every effort was made at first to use loblolly pine from local seed sources. Cones were collected and shipped to the Stuart Extractory for processing and then the seed was sown in the Forest Service Ashe Nursery at Brooklyn, MS. For some years, this was the principle source of Y-LT seedling. But the Ashe Nursery seedlings were rather expensive. Also, in some years, because of demands from the national forests Ashe Nursery could not supply all the needed seedlings.

Because of this situation, the Y-LT Project was forced to purchase seedlings from State nurseries across the South. The Pinson Nursery in Tennessee and the Winona and Waynesboro nurseries in Mississippi were the principle sources of seedlings. Even these sources, however, could not supply all the needed seedlings because of the tremendous volume required over a short time.

Packaging, Transportation, and Storage

Seedlings were initially shipped in open-end bales of 2,000 each in slat-sided trucks. In later years, bales of 1,000 seedlings were used to reduce workers' back strain. Contract trucks were required to use spacer sticks between layers of bales to permit air circulation. A tarpaulin covered the seedlings to prevent heating, freezing, or drying out. In warm weather, seedlings were moved only during the night. Later, seedlings were hauled in refrigerated railroad cars and in refrigerated vans. But the majority of the seedlings were transported by slat-sided trucks.

In 1963, the Project began packaging seedlings in K-P Bags (kraft-polyetlylene bags); first, with some moist sphagnum moss or granulated peat in the bag, and later without moss. More recently, seedling roots were dipped in a clay slurry and shipped in either the K-P bags or bales. Purported advantages of the slurry were that it kept seedling roots from drying out and that fertilizer or systemic insecticides could be mixed with the slurry.

In the early years of the Y-LT tree planting, seedlings were "heeled-in" upon arrival at the planting site in a well-drained sandy or loamy soil. A trench 12 inches deep was dug, and seedling roots were placed against the sloping side of the trench in a layer no more than 3 inches thick. The trench was then filled with soil, covering the roots to a depth of about 1 inch above the root collar.

By 1955, storage on racks in unheated buildings had replaced heeling-in. The racks consisted of slightly sloping shelves, arranged so that the bales could be easily watered every 2 or 3 days and turned around. Most of the seedlings were stored for no more than 10 days, but seedlings have been kept in good condition as long as 6 weeks. During cold weather, heat was used to keep the seedlings from freezing.

The storage of seedlings in soil pits for as long as 6 weeks was also effective.

In 1962, railroad refrigerator cars were used to store seedlings on three sidings. A cold storage room was completed at the Oxford Work Center in 1963, but refrigerator cars were still used until 1974. Sixteen of these rented refrigerator cars were in service in 1964. International Paper Company heard of this technique, purchased some "out-of-service" refrigerator cars, removed the wheels, and placed them at some of their work centers in Arkansas.

Spacing

In the late 1940's, the Y-LT Project followed the standard practice of planting trees on ungullied land at a spacing of 6 feet by 6 feet. Spacing in the gullies was never closer than 3 feet by 3 feet, later 4 feet by 4 feet. Planters understood from the beginning that they would plant seedlings only where the trees had a good chance to survive. Getting tree planters to vary spacing is hard to do, and many a tree was planted on a ridge or other inhospitable site.

Spacing standards kept changing as a result of continuing research and practical experience gained on the Project. By 1955, spacing outside of the gullies had been widened to 6 feet by 7 feet, although the first three rows adjacent to gully rims were planted at a 4 feet by 4 feet spacing. In 1958, spacing was again increased to 6 feet by 8 feet for all planting except that for gully control. And by 1962, specifications were that on gullied areas spacing would be no closer than 5 feet by 5 feet.

By 1965, Project experience indicated that a spacing of 6 feet by 6 feet on gullied or galled areas was satisfactory. The 6 feet by 8 feet spacing, however, was continued on grassy or wooded areas. In 1968 spacing on the less severe sites was widened to 7 feet by 8 feet, and on sites with no visible erosion to 8 feet by 8 feet.

The principal considerations in spacing were survival and early crown closure. Also considered was production of enough needle litter to stop soil movement in 5 to 10 years. The wider spacings enabled the Project to cover more ground with the trees available. Additionally, planting costs per acre were substantially lowered.

Site Preparation

A majority of severely galled or gullied areas need site improvement to ensure planted pines a better chance of their survival. During the early years of the Y-LT tree planting effort many acres were mulched. This practice continued intermittently throughout the years as new mulching materials were identified or developed.

Mulching reduces soil temperatures in the summer, soil washing and freezing, evaporation, and competing vegetation. It also increases the infiltration of water. Moreover, mulching adds organic matter to the soil and creates favorable conditions for desirable soil fauna and flora.

Some mulching materials used in the early years of the Project were spoiled hay, pine straw, cane pomace, and sawdust. Later, polyethylene film, excelsior netting, and plastic meshes were tried. Mulching is a very satisfactory measure, but except for small very critical areas, was generally too expensive.

Brush dams were used to create planting sites in gullied areas. Small dams made of brush collected on adjacent uneroded areas were built across the water courses in the gullied areas during the spring and summer. In constructing the dam, workers laid the brush loosely and overlapping at right angles to the direction of flow. Where possible, they dug into the floor and sides of the gully. See figure 9.

Brush dams are designed to build up an accumulation of soil in which seedlings can be planted, but will not hold back all of the water or sediment during storms. Dams are built 12 to 18 inches high with a slight depression near the center for storm overflow. The number of brush dams per acre or per gully

Figure 9.—Planting crews worked hard. Note planting bags (use of which increases production by 20 to 25 percent), brush dams, and pine seedlings packaged in Forest Service bales.

depends on availability of construction sites.

African lovegrass (*Eragrostis curvula*) is often planted as a supplement to brush dams either at the time of construction or after varying amounts of sediment is collected. Lovegrass effectively holds the soil and can withstand deep and continued siltation because it can root freely from the stem. Other grasses and legumes tried include sericea bicolor, sericea lespedeza, duck millet, fescue, partridge pea, clover, and several other species of lovegrass. Some have proven more effective than African lovegrass. See figure 10.

Kudzu was planted in gullies by the SCS during the very early years of the Project. Farmers were advised that one acre of kudzu would provide grazing for one cow. It wasn't long before requests on how to get rid of kudzu far exceeded the requests for planting it. Thus, kudzu planting stopped. Kudzu, unfortunately, didn't know its place and grew out of the gully and overwhelmed trees, fences, power lines, and outbuildings.

Backfilled trenches and "post-holes" dug with a power auger were other techniques to plant pine seedlings in gullies. Both are very expensive measures. Nothing, however, proved better than the combination of brush dams and lovegrass. In fact, the average intensity of brush dam construction on the Y-LT Project has been in the range of 20 to 50 dams per acre at an average cost of $45 to $112 per acre. From 1947 to 1982, site preparation, including the construction of 854,176 brush dams, was applied to 48,176 acres.

Small dams called "gully plugs" were constructed across the bottom of the larger gullies to keep the sediment on site. See figure 11. Since 1976, straw bale dams, fabric dams, silt fences of fabric, excelsior blankets, and plastic netting have all been used. The sediment trapping efficiency of the straw bale is four to five times greater than the cedar brush dam, and the grass seed in the bale frequently germinates and helps to stabilize the site.

Planting Procedures and Early Protection

Field planting did not begin on the Y-LT until the soil was wet to a depth of 10 inches, a condition that sometimes was not attained until well into December. Planting operations were stopped during freezing weather. Seedlings may dry out and die if the ground freezes hard for a period of 10 days or more shortly after they are planted. On the Y-LT Project, tree planters were eager to start in late November or early December to get some Christmas money. Although this was not always possible, the tree planting season was initially considered to run from December 1 to March 1.

Bad weather often delayed the conclusion until March 15. By then, many seedlings had broken dormancy and the tender young terminals were broken in planting. The advent of cold storage prolonged dormancy and enabled the Y-LT to extend the planting season into April. One year, planting did not conclude until the end of April. This is not ideal, but survival is satisfactory unless a late spring drought occurs. Growth of late-planted seedlings was less than those planted in February or March.

Because of the rough terrain, hand planting was the most efficient method of planting seedlings on the Y-LT. Machine planters were tried as early as 1951 and as recently as 1970 when a Wildland planter was used in Panola and Tate counties. Lack of suitable planting areas and heavy wet soil limited their effectiveness.

One person using a dibble or planting bar was most cost-effective. Each person carried his or her seedlings, initially in a bucket, then in a planting tray and, beginning in 1956, in planting bags. Use of the bags increased production 150 to 200 seedlings per man-day by reducing the number of "stoops" per seedling from three to one. The planter dug the planting slit, inserted the seedling and closed the hole. Three-man dibble planting crews and two-man post hole planting crews were tried. The posthole crews were only effective in cemented subsoils. During the last decade of Y-LT planting, women were hired as tree planters and worked alongside the men.

Planting crews usually consisted of 10 to 12 people with a foreman as supervisor. Larger crews used a "tree packer," who ensured that the planters were provided with trees and drinking water. Crews worked most efficiently when planting a strip with the crew members aligned at a 45 degree angle to the direction of planting. The lead person established the line, and the others guided on his spacing and maintained proper distance between rows. The fastest planters always worked at the front of the crew.

Beginning in 1957, an unusually large rabbit population clipped off great numbers of loblolly seedlings. Many rabbit repellents were tried during the 4 years that rabbits were a problem. Copper carbonate seemed promising but, when applied at the nursery, killed many seedlings. By the time an effective repellent, ZIP, was found, the rabbit epidemic had waned. It was later discovered that most of the clipped seedlings sprouted, survived and developed normally.

A serious tipmoth infestation occurred along with the rabbit damage. Entomologists established spraying

Figure 10.—Weeping lovegrass was seeded to stabilize the site prior to tree planting.

Figure 11.—A "gully plug" was constructed to prevent the land below from sedimentation. Planting trees and lovegrass above the gully plug stabilizes the soil within 10 years.

A serious tipmoth infestation occurred along with the rabbit damage. Entomologists established spraying studies to control tip moths. It was soon observed that loblolly pine had the ability to outgrow the damage caused by the tipmoths (killed terminals) and that spraying was unnecessary.

On many planting sites, it was necessary to fence out livestock to prevent damage to the newly planted trees. The Soil Conservation Service included the fencing needs in the conservation farm plan. The Forest Service purchased the wire and delivered it to landowners. They, in turn, were expected to furnish the posts and staples and to construct the fence. In some cases landowners were not physically able to construct the fence or financially able to have it constructed. In such cases flood prevention funds were used to construct the fence, but only to protect critical areas. Records on fencing are available from 1955 to 1980. During this time 3,667 miles of wire was provided to protect planted pines from livestock's winter browsing or trampling.

Direct Seeding

Several direct seeding studies were conducted on the Y-LT as an alternative method for conversion planting in blackjack-post oak stands. Seed was broadcast on burned and unburned areas and spot seeded with the Burns seeding hoe. Success was sporadic, so this effort was discontinued about 1970.

Hydrologic Stand Improvement

Low-quality blackjack-post oak stands were growing on 300,000 acres in 1948. The sites were dry and poor with little ground cover to prevent runoff and erosion. Foresters agreed that conversion of these areas to planted pine promised to substantially improve the hydrologic situation. See figures 12 and 13.

The first efforts were carried out under the ACP program. Blackjack and post oak stands, which had been underplanted with pine, were deadened by girdling with an axe. Many of the smaller oak sprouted. Even so, the practice caught on quickly. Under the ACP program the acreage of stand conversion increased from 431 acres in 1952 to 12,534 acres in 1956 and peaked with 22,431 acres in 1958 (table 1).

Chemicals were also used to reduce the sprouting of the girdled oaks. By 1957 the standard practice was to use a power girdler and to apply a 5 percent solution of 2,4,5-T in diesel oil to the cut surface.

In 1971, what had long been known as timber stand improvement was renamed HSI (hydrologic stand improvement), a more descriptive term for a flood prevention project. A new policy was adopted in 1963, whereby critical areas on which there was a scattered stand of hardwoods could be planted and released by force account crews. Project force account crews were equipped with tree injectors filled with undiluted 2,4-D, a much cheaper chemical than 2,4,5-T. Force account hydrologic stand improvement immediately became a popular practice.

In 1971 the use of 2,4-D was temporarily banned by the EPA (Environmental Protection Agency) and was replaced by Silvex, a herbicide which proved highly ineffective when injected. Later, Tordon, diluted to half-strength, was used and was highly effective on hard-to-kill species such as red maple.

The crew foreman saw to it that clumps of game food trees and aesthetic trees and shrubs such as dogwood, redbud, serviceberry, and wild plum were not treated. Also, fence row, roadside, and witness trees (trees marking the property's corners), were left untreated. An understanding was always reached with the landowners on these conditions before these areas were treated.

Results of the tree planting program can be seen in figures 14 through 21.

Figure 12.—Sparse stands of blackjack oak and post oak were also sources of sediment.

Figure 13.—Planted with pine with the hardwood deadened, the site shown in figure 12 was stabilized 4 years later with a prospective pulpwood stand.

Table 1. — Acres of poor quality hardwoods deadened to release planted pine and to improve the hydrologic situation

Fiscal year	ACP TSI	Force Account HSI
1948-1951	2,916	—
1952	431	—
1953	757	—
1954	1,683	—
1955	5,353	—
1956	12,534	—
1957	11,853	—
1958	22,431	—
1959	22,101	—
1960	14,890	—
1961	16,091	—
1962	12,702	—
1963	9,370	2,250
1964	7,603	6,674
1965	4,499	9,999
1966	4,680	9,727
1967	3,382	12,215
1968	2,933	13,923
1969	2,031	8,865
1970	1,467	8,811
1971	1,636	3,492
1972	1,261	6,649
1973	361	8,816
1974	—	3,492
1975	84	6,648
1976	—	8,613
1977	—	2,309
1978	—	4,190
1979	—	285
1980	—	233
1981	—	1,781
1982	—	1,257
GRAND TOTAL	163,049	120,229

Figure 14.—This land, hand cleared 40 years ago by Harris McNeil of Marshall County, lay idle for 15 years. See figure 15.

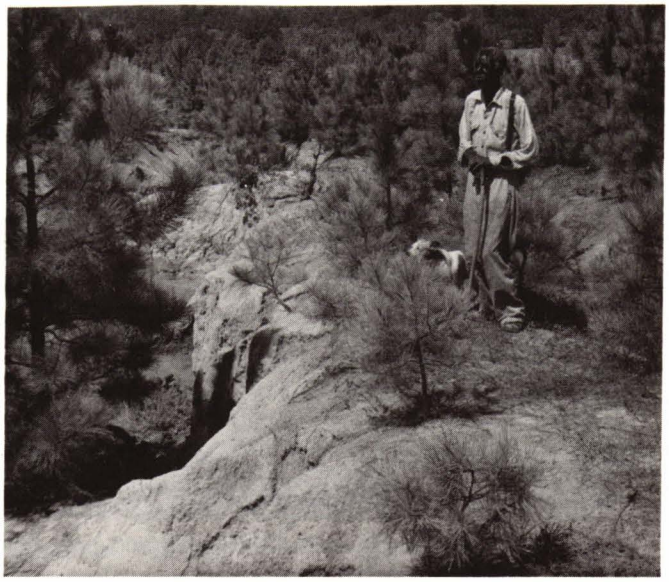

Figure 15.—Harris McNeil and his trees, six years after planting.

Figure 16.—This was an abandoned, eroding hillside on the Ed Eggerson farm near Taylor, MS in 1948. See figure 17.

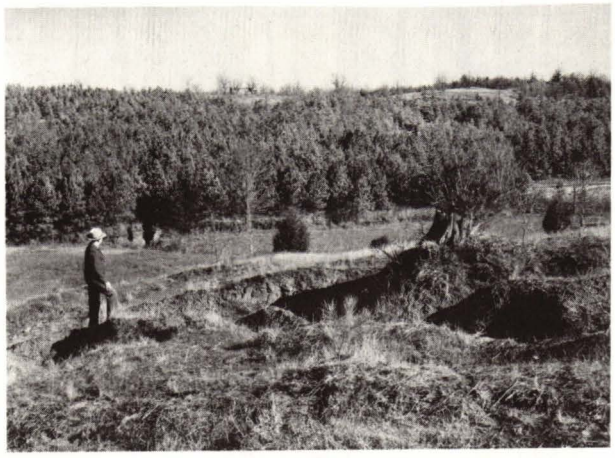

Figure 17.—Returned to productivity, the same hillside as shown on figure 16 is covered with 9-year-old pine.

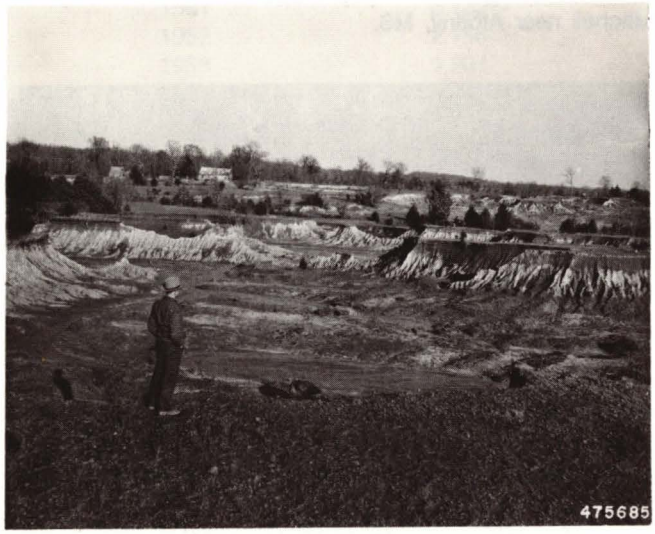

Figure 18.—A project forester looks over a 57-acre gully near Holly Springs in Marshall County. See figure 19.

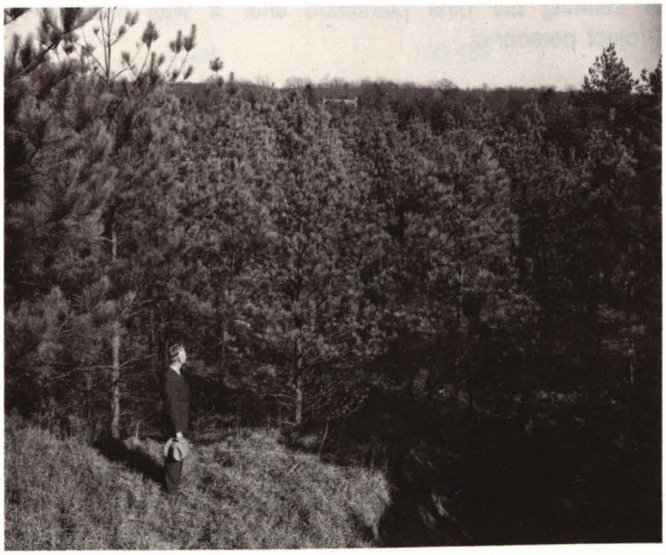

Figure 19.—A watershed planner inspects the same gully in 1969, now protected by 16-year-old pine.

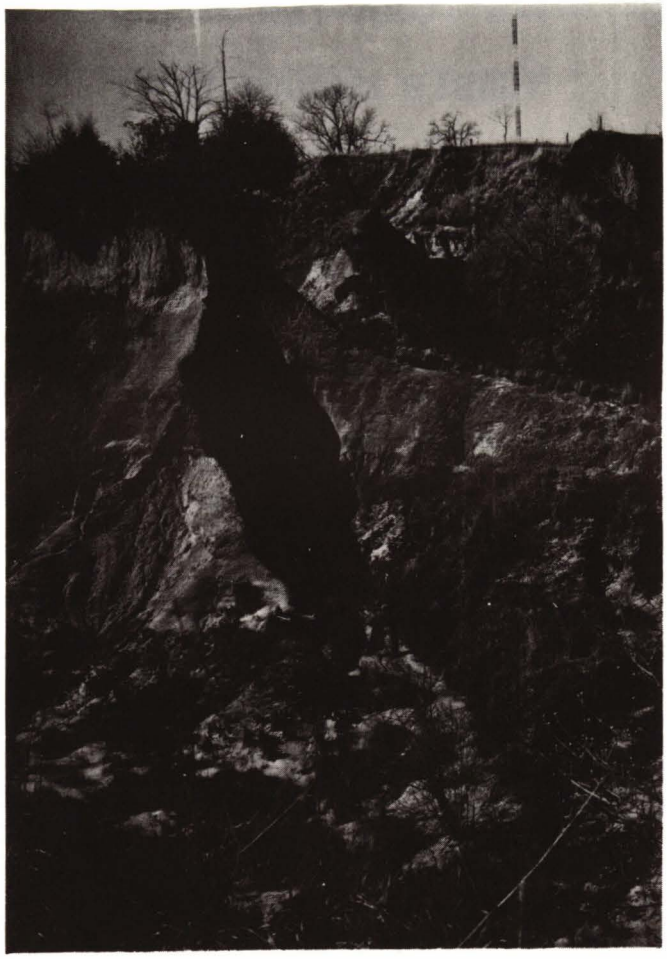

Figure 20.—Jim Jones gully (started in a goat trail) looked like this in 1956 as remedial work began. See figure 21.

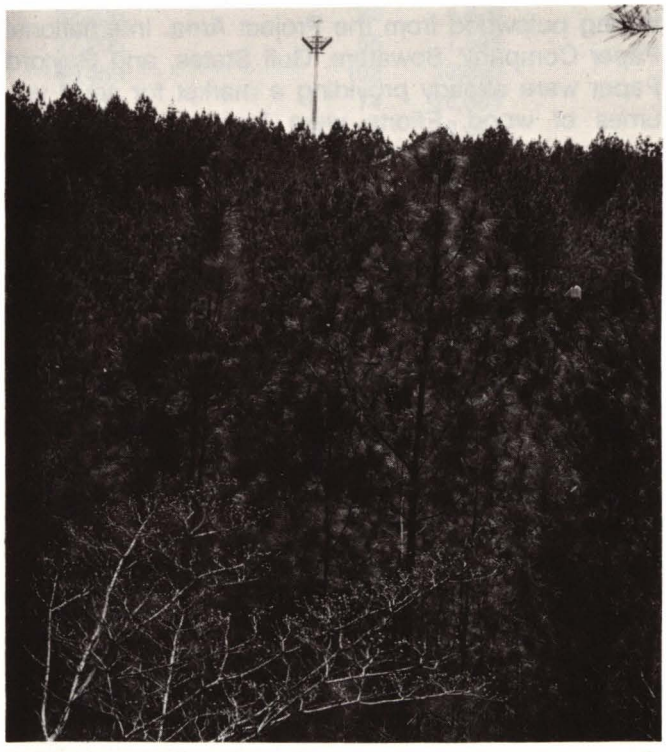

Figure 21.—In 1969, Jim Jones gully had a beautiful forest cover.

CHAPTER 7

TIMBER MANAGEMENT

The Tallahatchie Survey Report of 1942 had this to say about conditions on forested lands, "Since little or no proper forest management has been exercised the merchantable growing stock has been reduced to a preponderance of small, defective, or poor quality trees of little value. Uncontrolled fires and grazing have destroyed most of the ground cover and have been partly responsible for the fact that approximately 64 percent of the forests have a stocking of less than 300 board feet per acre."

The earliest efforts of the project foresters were confined to preparing management prescriptions and to marking timber. There was not much to mark except low quality hardwood stands. Stands of timber that were marked were often cut without regard for the marking. A few stands of pine planted by the CCC were selectively thinned. A poor market for pulpwood delayed these thinnings on both private lands and the Holly Springs National Forest,

By FY 1957, requests were coming in to help thin pine planted in 1948 and 1949. It was a little early, but these requests were an encouraging indicator. See figures 22 and 23. In 1960, the Tennessee River Pulp and Paper Company at Counce, TN started obtaining pulpwood from the Project Area. International Paper Company, Bowaters, Gulf States, and Gaylord Paper were already providing a market for small volumes of wood. Efforts were increased to sell all management levels of the pulpwood and paper industry on the need for sustained yield management of the flood prevention plantations. A definitive timber management policy was spelled out in a 1962 timber management guide.

Figure 22.—A project forester looks over the results of this timber marking in loblolly pine plantation owned by Tom Mitchell near Albany, MS.

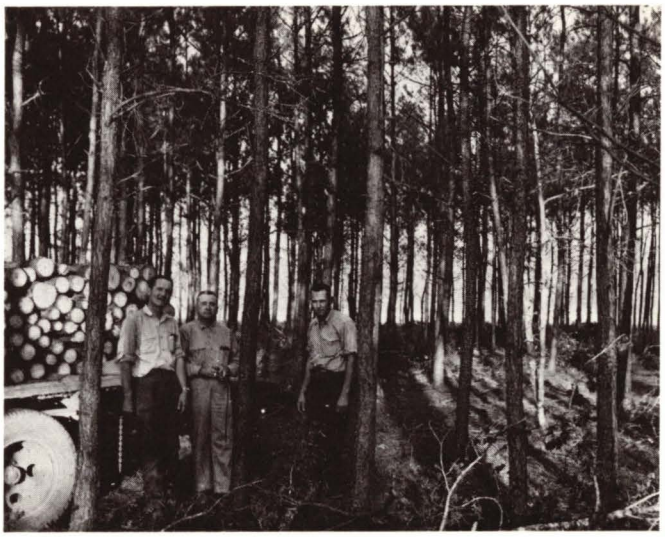

Figure 23.—A project forester visits with a landowner who is thinning his pine plantation after it was marked by Project personnel.

Project foresters wrote their first forest management plans for small landowners in 1964. Great care was taken to draft the plan to meet landowner's objectives. These plans provided landowners with a map of the timber stands on their property; a management prescription for each stand; a schedule of thinning and harvesting operations and some idea of the monetary returns expected from managing their forest land.

The plans also covered protection from fire, disease and insects, and wildlife management. The plan format was modified as the years passed, but the basic data remained the same. In 20 years, 5,046 management plans covering 541,995 acres were prepared (table 2). These plans concentrate on areas where the timber is ready for thinning or harvesting and where landowners indicate they want a plan and will follow it. Project-wide cutting budgets, assuming a first thinning at age 18 years and a cut of 4 cords per acre, were also prepared to show industry what the wood supply could be under management.

Construction of Champion International's Novoply (flakeboard) Plant at Oxford in 1968 helped in changing landowners attitudes towards forestry. Although the conversion of forest land to pasture or row crops had resulted in some clearcutting, that trend diminished. Marked timber sales were gaining favor. Because of industrial expansion and new markets, landowners became aware of increasing timber values. For instance, land that sold for $10 to $15

Table 2.—Forest management activities on the Y-LT Project

FY	Timber marked (MBF)	Forest management plans prepared		Tree farms inspected	
		No.	Acres	No.	Acres
1947-1951	3,641	—	—	(DATA NOT AVAILABLE THROUGH 1967)	
1952	1,198	—	—		
1953	602	—	—		
1954	890	—	—		
1955	1,176	—	—	—	—
1956	1,503	—	—	—	—
1957	2,380	—	—	—	—
1958	2,178	—	—	—	—
1959	2,651	—	—	—	—
1960	2,444	—	—	—	—
1961	3,132	—	—	—	—
1962	2,146	—	—	—	—
1963	1,204	—	—	—	—
1964	2,446	9	1,670	—	—
1965	2,203	47	4,867	—	—
1966	1,863	97	13,410	—	—
1967	3,445	108	10,389	—	—
1968	3,706	102	10,010	120	42,390
1969	9,469	108	14,514	11	1,780
1970	3,132	89	9,468	124	18,120
1971	9,161	120	11,146	384	54,305
1972	13,293	365	38,700	409	53,653
1973	7,974	551	51,518	424	52,465
1974	7,567	466	46,912	364	37,551
1975	7,018	444	43,223	102	13,385
1976	10,377	627	69,644	182	17,381
1977	7,381	250	32,205	36	4,620
1978	7,231	237	77,205	55	7,595
1979	7,175	294	40,359	102	13,385
1980	4,362	439	42,359	74	28,985
1981	5,909	376	31,225	85	8,428
1982	5,645	245	26,263	80	8,501
1983	5,960	72	6,908	30	2,904
Total	150,462	5,046	581,995	2,582	365,448

per acre in 1950 sold for $550 to $600 per acre in 1979 if it had planted pines 10 to 20 years old on it. Project foresters were asked "Why didn't you convince me 20 years ago that I should plant pine trees?" Some landowners were hesitant to market and sell their timber until they had a clearer picture of what the market was going to do.

Beginning in 1970, Project foresters surveyed the 15-year-old Y-LT plantations on their unit. A summary of the results of these surveys conducted through 1980 is in table 3. The average acreage lost in the first 15 years was 13.56 percent. Premature cutting and clearing for row crops and pasture accounted for most of the acreage lost, 10.58 percent. Acreage losses do not include that lost to inadequate survival.

Starting in 1954, Project foresters and forestry technicians inspected and signed hundreds of Tree Farms. The Tree Farm Program is sponsored locally by the Mississippi Forestry Association and nationally by the American Forestry Council. To qualify for Tree Farm certification the woodland must be: (1) privately owned; (2) managed for the growth and harvest of repeated timber crops and (3) adequately protected from fire, insects, disease and destructive grazing.

Harvesting practices must be of a type that assures prompt reforestation with desirable trees. The assumption was that recognition as a Tree Farmer helps to ensure proper management and continued existence of young flood prevention pine plantations. For this reason, Project personnel continually tried to

*Table 3. -Pine plantation acreage on the Y-LT Project lost or converted to other land use, during the first 15 years**

Year planted	Total acres surveyed	Total acres lost ‡	% Lost	Causes For Loss: Converted to row crops (acres)	%	Converted to pasture (acres)	%	Premature cutting (acres)	%	All other (acres)	%
1955	23,461	2,128	9.07	20	0.09	1,317	5.61	422	1.80	369	1.57
1956	29,187	3,065	10.50	58	0.20	1,404	4.81	789	2.70	814	2.79
1958	40,573	4,847	11.95	94	0.24	2,539	6.26	1,596	3.93	618	1.52
1959	37,285	5,761	15.45	381	1.02	2,673	7.17	1,304	3.50	1,403	3.76
1960	40,657	6,289	15.47	550	1.35	3,188	7.84	1,789	4.40	762	1.87
1961	35,402	5,508	15.55	727	2.05	2,412	6.81	956	3.70	1,413	3.99
1962	30,459	3,605	11.84	294	0.97	1,474	4.84	716	2.35	1,212	3.68
1963	26,101	3,420	13.10	322	1.23	900	3.45	1,402	5.37	796	3.05
1964	23,301	2,934	12.59	375	1.61	761	3.27	857	3.67	941	4.04
1965	22,721	4,371	19.24	579	2.55	1,545	6.80	1,275	5.61	972	4.28
10 YR TOTAL	309,147	41,928	13.56	3,370	1.10	18,213	5.89	11,106	3.59	9,300	2.98

* 1957 plantations were not checked.

‡ Does not include acres lost due to inadequate survival (largely hardwood competition).

sign up as tree farmers all ownerships on which Y-LT trees had been planted.

Nothing discourages landowners more than a poor job of thinning their pine plantation. For this reason, during 1974 a new program was initiated to improve the harvesting of Y-LT plantations. A "Conservation Code of Good Practices" for wood producers was developed. Producers who met the standards of the code were recognized as "Certified Wood Producers" and given appropriate identification. This program was sponsored by the Mississippi Forestry Association. The objective was to upgrade the wood harvesting and producing profession and to give landowners a reference tool in selecting good operators to harvest their pine plantations. The Code was made a statewide program in 1976. Forty-six wood producers were certified on the Y-LT. See figure 24.

Figure 24.—Mississippi's first certified wood producer, Mr. Jimmie Swevis of Carrollton, receives certificate of recognition from Congressman Jamie L. Whitten at a forestry field day.

As the Y-LT staff assigned to timber management activities decreased in number, the Mississippi Forestry Commission increased its efforts. In addition, forest industry assigned foresters to assist landowners. In fact, some landowners are now reluctant to pay for services that have been free for so long.

CHAPTER 8

UTILIZATION AND MARKETS

The 1948 Forest Survey Report identified over 300 sawmills in the 19 Y-LT counties. More than half of these cut less than 1 million board feet per year. The Bruce Lumber Company at Bruce, MS was the only mill that sawed more than 10 million board feet per year. Most of their output went to their oak flooring plant. Holmes County had the only good market for pine pulpwood. A treating plant in Grenada processed crossties, bridge timbers, and pine fence posts.

The Tennessee River Pulp and Paper Company stationed a forester at Oxford, MS during the late 1950's with instructions to buy pine land for no more than $25 per acre. Their mill at Counce, TN just across the state line from Corinth, MS started operation in December 1960. About this time, several attempts were made to harvest the low-grade hardwood for charcoal production, but kilns using mill waste were more cost-effective.

With an increasingly active pulpwood market came fear of premature clearcutting of the Y-LT plantations. The FY 1961 Annual Report contained this note of caution:

> *The opportunities are here for the Y-LT Project area to become one of the most productive pulpwood areas in the state on a sustained and managed basis. The danger is also here that 14 years of forestry progress can go down the drain in the scramble for the fast dollar. If this happens, watershed values can once again deteriorate and the gullies start pouring forth their sterile sands. The topography and erodible soils are still here. All men who work on or with this land must be ever mindful of the basic weakness of this land of rolling hills and sandy soils.*

According to the FY 1962 Annual Report, meetings were held in which representatives of the pulpwood industry and State and Federal agricultural and forestry agencies discussed forestry on the small private ownerships in the Y-LT Project area. The Report also notes that "A broad I&E platform was adopted in which each group would participate." At the heart of the agenda was a Marking Workshop. It was designed to establish desirable marking and logging in young pine plantations to conserve watershed values while harvesting part of the stand.

As the report says, most timber management activity on the Project involved getting the stand ready for a cut at some future date, anywhere from 5 to 15 years after planting. And about 85-90 percent of our timber management effort was planting or timber stand improvement, or both. They did some marking in CCC pine plantations, marked low-grade hardwoods prior to stand conversion, made occasional thinnings in a natural shortleaf stand, or bottomland hardwood stand.

"The biggest single job, however, is to sell forestry to the public," the report notes. "Landowners and timber operators alike must be concerned that forestry is good for both of them. This is the big reason we

have invited industry to help in the Y-LT forestry effort. The job is too big for any one man or agency."

Despite an improved pulpwood market, however, stumpage prices remained low particularly for hardwood pulpwood, which was shipped to the International Paper Company Mill at Natchez. In some cases, the owner gave the pulpwood cutter the wood for clearing an area for pasture. Project foresters recognized that a knowledge of the available markets was necessary to advise landowners.

A 1962 survey by the Mississippi Forestry Commission and the Southern Forest Experiment Station found 45 small sawmills and five large sawmills within the Y-LT boundary. In addition, operating in the general area were several handle-stock mills, charcoal kilns, a cooperage plant, a gum veneer mill, a pallet mill, and a paper plant and a post and piling plant.

The Project added a utilization and marketing specialist to the staff in 1964 to help develop markets for special forest products. As a result of the specialist's efforts, a post-peeling plant was built at Taylor, MS to use small diameter pine. Later, post-peeling plants were established at Lexington and Stewart, MS. A study showed that landowners made more money by marketing 4 and 5 inch trees for posts than by selling them for pulpwood. See figure 25. The utilization specialist position was eliminated in 1970.

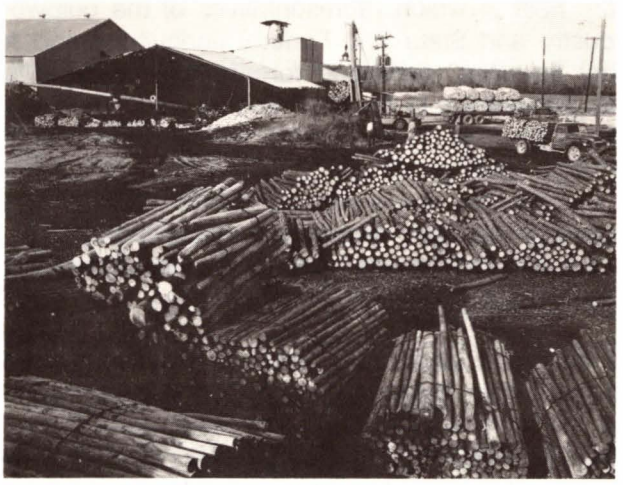

Figure 25.—The pine plantations have attracted small forest products plants such as this post peeling plant.

With the expansion of Mississippi's forest industries in the 1960's, paper mills, plywood plants, and sawmills outside the Y-LT area affected the wood-procurement areas of long-established plants. St. Regis, Weyerhaeuser, and International Paper Company established pulpwood yards at various points throughout the Y-LT. Tennessee River Pulp and Paper Company had three weight-scale yards in the area. As competition for wood increased, stumpage prices rose. At Louisville, Georgia-Pacific's plywood plant's first veneer was peeled from logs procured within the Y-LT area. Memphis Hardwood Flooring Company built a large sawmill at Potts Camp, and Hankin's Lumber Company built one at Grenada.

In June 1967 ground was broken for the construction of a $7 million U.S. Plywood-Champion Papers, Inc. flakeboard plant at Oxford, which in full production would use 130,000 cords per year of pine and hardwood. See figure 26. Westvaco started construction during the summer of 1967 on an $80 million pulpmill at Wickliffe, KY, which by 1970 was to use 1,000 cords per day of pine and hardwood. Much of the needed pine was expected to come from north Mississippi.

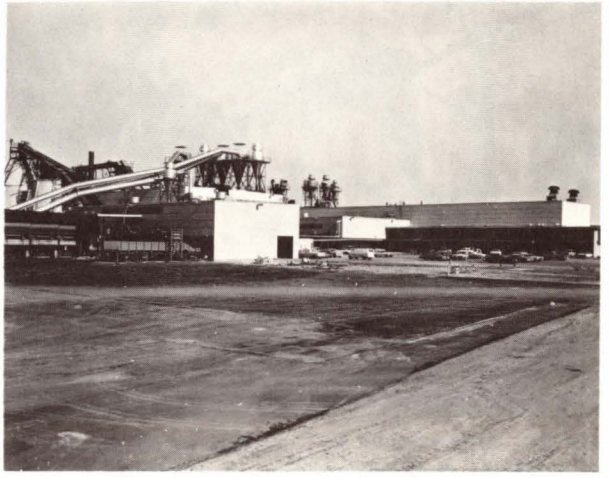

Figure 26.—Large forest-product firms have also become established, such as Champion Papers, Inc. Novoply plant in Oxford, MS.

The wood-using directories published by the Y-LT documented this expanding industry within and adjacent to the Y-LT. The 1967 directory listed nine large sawmills compared with seven in 1966, and five in 1962. Six chippers were operating on the Y-LT, whereas two years before there were none. Thirty-six pulpwood yards were procuring wood from the Y-LT in 1967, 24 in 1966, and 13 in 1963. The 1968 directory listed 11 large sawmills, 8 pulpwood chippers, and 39 pulpwood yards.

Weyerhaeuser purchased a millsite at Bruce, MS in 1972 and in 1974 their chipping sawmill began operations. Production increased in 1980 to 100 million board feet using pine trees as small as 7 ½ inches in diameter.

In 1978, a group of Mississippi businessmen and some newspapers began a feasibility study for the

construction of a farm Cooperative newsprint mill at Grenada, MS. For the next 4 years, efforts were made to get pine plantation owners to pledge so many cords of wood to the proposed mill. A Canadian newsprint manufacturer enlisted as a potential partner. But, rising costs of construction, increasing interest rates, and a downturn in the general economy prevented construction of this mill. Proposed production was expected to be about 220,000 tons of newsprint annually. (In 1986, the Mississippi Chemical Corporation announced plans to build this mill.)

In 1982, the Illinois Central Railroad abandoned its run between Oxford and Coffeeville, which eliminated several pulpwood yards in Coffeeville and Water Valley. International Paper Company replaced their Coffeeville yard with a very large wood yard at Hardy, which is on the mainline of the Illinois Central Railroad. This yard buys hardwood and pine pulpwood in tree lengths. It is also close enough to Interstate 55 to be cost-effective to procure wood in Panola and Tate counties.

In addition, ground was broken in 1983 at Elliott, MS for a Louisiana-Pacific mill complex. The first unit to go into operation was a chipping sawmill capable of producing 30 million board feet a year. Construction of a waferboard plant may follow.

Georgia-Pacific, in 1984, broke ground for an oriented-strandboard plant south of Grenada. Both this plant and the Louisiana-Pacific plant buy tree-length logs.

When the Y-LT Project closed, the market for wood from its plantations was rapidly expanding. There is now more reason than ever for these plantations to be managed on a sustained-yield basis.

CHAPTER 9

RESEARCH

The Southern Forest Experiment Station, within 10 years of its establishment, recognized the seriousness of the erosion problem in north Mississippi. H.G. Meginnis was assigned to determine the effect of cover on surface run-off and erosion in the loessial uplands of Mississippi. From October 1931 through September 1933, measurements of surface run-off and soil erosion were taken near Holly Springs on small plots with a uniform slope of 10 percent.

The study showed that run-off from barren and cultivated fields was 47 percent or more and the annual soil loss was 69 to 160 tons per acre. In comparison, run-off from unburned broomsedge fields was slightly more than 1 percent, and from oak forests, less than 1 percent. The conclusion drawn from this study was that, in the loessial uplands of Mississippi, plant cover, in addition to preventing abnormal erosion, was of tremendous value in flood control and stream-flow regulation.

The knowledge and experience gained in this study was invaluable in preparing the Flood Control Survey Reports published for the Little Tallahatchie Watershed in 1942 and for the Yazoo Watershed in 1944. These reports were prepared under the direction of the Southern Forest Experiment Station in cooperation with the Soil Conservation Service and the Bureau of Agricultural Economics. A survey party was headquartered at Oxford from 1933 to 1941 to collect the data for the reports.

The Tallahatchie Research Center of the Southern Forest Experiment Station was established at Oxford in 1945. It studied the conservation issues of north Mississippi and that part of Tennessee west of the Tennessee River. The early research program was diverse to meet the needs of farmers and other small woodland owmers. One of the earliest studies was an analysis of 159 outplantings of various species on sites across north Mississippi and west Tennessee. From this study came recommendations to:

1. Plant loblolly pine instead of shortleaf pine.

2. Try to get stock from seed sources within 100 miles of the planting site.

3. Plant trees where they had the best chance of survival using a 6 foot by 6 foot spacing but never closer than 3 foot by 3 foot. A rigid spacing is not needed in gullied areas. If possible, in gullied areas, plant in spots with a deep moist soil.

4. Plant each tree carefully and correctly keeping the roots moist before planting.

5. Take extra precautions such as mulching, building check dams, and seeding grasses, etc., to get trees established on severely eroded sites.

6. Protect plantations from fire and livestock.

7. Recognize the possible need for replanting in gullied areas.

In 1954, the project manager took steps to work more closely with researchers. This resulted in the preparation, by the Oxford Research Center, of a Project Analysis (January 1956) that stated watershed management research conducted by the Tal-

lahatchie Research Center would be aimed primarily at information vital to plan, install, and evaluate the Y-LT Flood Prevention Project's activities. The types of information necessary for watershed management in the area were grouped into four general classes: (1) needs for improving the effectiveness of remedial land treatments; (2) needs for design and planning of minor engineering structures and improvement works for erosion control; (3) needs for evaluating the effectiveness of the land treatment program; and (4) basic information needs.

While this analysis was under preparation, the Research Center initiated studies on effects of fertilizing seedlings before lifting, seedling storage methods, mulching, survival and growth of three grades of seedlings, root pruning, post-hole planting, soil collection trenches, and species adaptability. By 1957, the Y-LT had become recognized as the Research Center's biggest client.

Additionally, investigators studied loblolly seedlings treated with transpiration inhibiting substances, balled 1-1 stock, and rodent repellents. The effect of extreme temperatures (overheating or freezing) on seedling survival was also investigated. Two thinning studies were established in CCC plantations, and research was begun on three small old-field watersheds and three small blackjack-post oak watersheds.

In 1958, the Research Center reported that "During the last three years, 26 planting studies have been established. From these studies have come recommendations that bale storage of seedlings is practical; that the root length of seedlings can be safely reduced from 8 to 7 inches; that deep planting is not a detrimentral practice and that nicotine sulphate in Dow latex can be substituted as a rabbit repellent for copper carbonate in asphalt emulsion. Other studies emphasized the need for planting high quality seedlings on badly eroded sites."

As tree planting research continued, the results were immediately adopted by the Project. Direct seeding trials were conducted for more than 10 years. Tip-moth damage and its prevention were investigated. More watersheds were established to measure run-off and sediment production from various cover types. Packaging in K-P bags, replacement of moss with a clay slurry, top pruning, late season planting, the effect of inundation on seedling survival, storage in soil pits, and timber stand improvement methods were also studied. Plantation growth data became available, and some 200 growth plots were established in CCC plantations.

Research at the Tallahatchie Research Center was reorganized in 1962. The word was given to "go basic." The staff was divided among three projects: forest hydrology, forest soils, and forest management on erosive sites. Financial assistance from the Y-LT permitted the inclusion of the third project in the research program. As the number of planting studies was curtailed, emphasis was placed on the developing plantations on the watershed. For example, a study of the forest floor determined that 8.15 tons per acre of litter accumulated in plantations established on old fields compared with an accumulation of 6.14 tons per acre on conversion areas.

By 1967 research had concluded that run-off depends on the amount, intensity, and timing of rainfall, moisture content of the soil at the time of the rain, soil type, and condition of the forest floor. A layer of pine litter is very effective in holding soil in place and in reducing sediment production to a minimum. This conclusion, while not earthshaking, substantiated the work done on the Y-LT Project for the previous 20 year period.

New facilities, named the Forest Hydrology Laboratory, were built in 1968 to house the research activities.More precisely, on October 24, 1968 the Forest Hydrology Laboratory was formally dedicated. Congressman Jamie Whitten gave the dedicatory address and Chief Edward Cliff spoke for the Forest Service.

All plantation management studies were officially closed in 1967. These were, however, remeasured with Y-LT assistance until 1981. The best loblolly plots at age 37 had a total yield of more than 2 cords per acre per year. The total growth amounted to nearly 20,000 board feet, International 1/4" Rule. Total production from the best 43-year-old shortleaf plantations were 1.33 cords per acre per year. A little over 12,000 board feet of lumber could be cut from this amount.

A 3-year study was completed during 1969 dealing with changes in litter depth and weight under managed loblolly and upland oak stands. The findings have some bearing on watershed management decisions. For example, during the study the litter weight under clearcut loblolly stands dropped 3 tons below the uncut stands, Heavy thinning not only resulted in a 1 1/2 ton decrease in litter weight, but also a drop of almost 25 percent in annual litter fall. Projected figures from a deadened hardwood stand indicated that the tree litter would be essentially gone in 6 years.

Research on containerized seedlings was conducted from 1967 to 1973. The goal was to extend the length of the planting season. The Walter's plastic bullet, Spiral-Kraft tubes, Japanese paperpots and BR-8 blocks were all used. Survival of the container-

ized seedlings was comparable to that of bare-rooted seedlings planted at the same time. Planting cost was approximately double that for bare-root stock. The field trials were therefore terminated.

Converting low-quality hardwood stands to loblolly pine plantations produced changes in storm-flow volumes and distribution and sediment characteristics. Increases of flow volumes persisted for 3 or 4 years after conversion and averaged 25 percent. Decreases began the fifth year and averaged more than 80 percent of the flow before conversion after the eleventh year. Increased interception of rainfall by pine accounted for an average of less than 50 percent of the mean reductions of flow volumes for large storms 12 to 15 years after treatment. Average annual sediment concentrations were decreased 50 to 90 percent after the fifth year.

Clearcutting areas that were converted from hardwoods resulted in a loss of about half the watershed benefits obtained by planting. But on planted old fields that were clearcut, the run-off and sediment production returned to that before planting. See figure 27.

Figure 27. —The watershed planner explains a gauge recording surface run-off to Indian visitors. The gauge is one of many maintained by the Forest Hydrology Laboratory in Oxford, MS.

The Y-LT Project in its final years concentrated on the management and maintenance of the many thousands of acres of pine plantations; research on nutrient loss and acid rain. Although their courses diverged somewhat in the later years, it would be hard to find another example of such close cooperation between an operational unit and a research organization of the Forest Service.

CHAPTER 10

QUALITY CONTROL

Very early in the Project, foresters realized the number of trees that survived to hold soil in place was far more important than the number planted. By 1953, a system had been devised of check plots to determine the quality and quantity of tree planting.

Planting Checks

The planting crew foreman dug three seedlings behind each tree planter each day and tallied the seedlings planted on three or four 1/100 acre plots to check on spacing. He reported on the following items on his check sheet:

1.Planting slit: (a) correct depth, (b) foreign material such as trash and leaves, (c) top and bottom properly closed.
2. Planting quality: (a) trees in vertical position; (b) no U-roots; (c) no loose seedlings; (d) no seedlings planted too deep (root collar more than 2 inches below ground surface); (e) no seedlings planted too shallow (root collar above ground surface); (f) not more than one seedling in the planting slit; (g) correct spacing; (h) no cull seedlings planted.
3. Care of planting stock: (a) ample wet moss in planting bag to beep roots moist; (b) planter holding one tree at a time in his hand; (c) bales or bags of seedlings stored in shade.
4. Gully planting site selection: Seedlings not planted on narrow ridges without top soil, on steep side slopes, or in intermittent water courses without sediment-collecting barriers.

One bale of seedlings from each shipment of 1-year-old loblolly pine planting stock was sample graded using standard specifications for 1, 2 and 3 grade seedlings. The following information was recorded: nursery name, bundle weight, condition of bundle and seedlings (tight, loose, mishandled, diseased, or healthy), type and amount of packing medium, roots dry or moist, length of roots (inches), number of trees in bales, date seedlings packed, date seedlings received, and number of seedlings by grade.

Seedlings that turn brown within one month after planting are generally dead when planted. To forestall this, frequent conferences were held with the nurserymen, and the lifting and packaging operations checked. Planting trees on severe sites in the gully-eroded areas on the Y-LT put great stress on seedlings. Construction of check dams and application of other site preparation techniques reduced this

stress. Regardless of these efforts, the sites were still severe compared with planting on areas without severe erosion.

Survival Checks

To determine the relative success of each yearly planting, a survival check was made on randomly selected farms. To facilitate selection of samples, individual farms were identified by the owner's name and farm plan number. The number of farms that had to be sampled to obtain a survival estimate of desired accuracy was determined as follows:

$$N = 10{,}000 \quad \frac{(100\text{-}P)}{L^2 P}$$

Where N = number of farms to be sampled
P = the probable average percent survival
L = the limit of error acceptable as (+,-) 10 percent

To obtain a well-distributed sample and without having to weight plot data, sample farms were selected from a complete listing of all farms planted. Probability of selection was proportional to the area planted. Then, a table of random numbers was used to identify the specified number of farms.

The sample farms were selected by the project manager's staff at the end of the planting season. The applicable project forester then located a grid of ten 1/100 acre plots on each selected farm. He occupied the plot, marked the plot center, located the plot on the map and flagged each planted seedling on the plot. In the fall, after the vegetation had dried, the project forester or technician went back to each plot and counted the surviving trees. If possible, he identified reasons for seedling mortality. His survival check was turned over to the Project Manager's Office for computation of a projectwide survival percentage. Generally, survival on force account and ACP or farmer planting was computed separately. Results of the survival checks from 1954 to 1973 are given in table 4.

Stocking Examinations

In 1972, the system of survival checks was replaced by stocking examinations which were made on all Force Account planting areas and any other critical area stabilization planting of 10 acres or more. Field examinations were conducted on quadrats as follows:

1. Less than 10 acres — a minimlum of 10 quadrats
2. 10 to 100 acres — one quadrat per acre
3. more than 100 acres — 100 quadrats

Table 4. —Seedling Survival

Planting season	Seedlings planted (M)	Survival (percent)	Rainfall (inches)
1954	25,066	36.2	43.53
1955	32,366	77.3	56.18
1956	39,031	57.9	45.28
1957	37,266	83.7	73.49
1958	44,768	63.7	55.93
1959	45,798	75.5	55.22
1960	45,285	69.8	50.52
1961	39,286	89.5	59.23
1962	33,776	77.1	52.65
1963	33,459	76.0	43.56
1964	34,025	72.0	55.87
1965	28,309	71.4	42.11
1966	28,079	55.0	48.68
1967	26,735	81.5	48.30
1968	20,712	68.6	64.98
1969	15,438	78.8	49.02
1970	19,149	76.4	52.83
1971	18,017	75.3	47.86
Weighted overall survival		71.7	

Quadrat size was determined by the planting spacing. For example, where the spacing was 7 by 8 feet the quadrats were 7 by 8 feet. Before going to the field after the vegetation dried in the fall, investigators located the lines of travel on the plantation map. The maps showed the number of plots to take on each line and the distance between them. A quadrat was considered stocked if it contained one or more seedling. Stocking percentages are given in table 5.

During the stocking examinations, understocked portions of plantations were mapped for replanting. The stocking examination's adequately stocked percentage cannot be compared with the survival percentages obtained in earlier years. Although drought was the leading cause of seedling mortality, the annual rainfall figures shown do not tell the whole story. Rainfall during May, June, and July is critical for high survival rates.

The constant assessment of seedling survival pointed out the need for replanting substantial acreage. From 1950 through 1982, it was necessary to replant 150,645 acres. The average annual replanting rate was approximately 20 percent.

Table 5. —Planting Stocking

Planting season	Acres planted	Stocking (percent)	Rainfall (inches)
1972	14,648	77.2	61.25
1973	9,363	78.4	73.86
1974	8,067	68.6	60.10
1975	8,346	92.4	54.79
1976	11,033	71.1	46.10
1977	5,843	65.4	52.61
1978	3,481	40.6	58.84
1979	4,515	88.0	71.68
1980	4,343	57.7	48.00
1981	3,388	91.4	36.38

The constant assessment of seedling survival pointed out the need for replanting substantial acreage. From 1950 through 1982, it was necessary to replant 150,645 acres. The average annual replanting rate was approximately 20 percent.

Hydrologic Stand Improvement Checks

When tree injectors replaced the axe and Little Beaver as the means for deadening unwanted hardwoods, the importance of painstaking inspections increased. The crew foreman had to see that the workers made the incisions as close to the ground as possible; on a level plane around the tree; positioned to prevent spillage of herbicide and deep enough to penetrate the cambium layer. He also had to be sure the hard-to-kill species were completely girdled.

In addition to the above, the foreman checked and tallied the following information on four 1/100 acre plots each day:

-- seedlings adequately released

-- unnecessary work done

-- average d.b.h. of stems treated

-- key wildlife areas identified and retained

-- retention of an adequate number of den trees

-- retention of wildlife habitat trees

-- retention of hardwood hollows and stringers

HSI crews also were inspected at periodic intervals by the forestry technician, project forester and project timber management specialist.

Limited Functional Inspections or Functional Assistance Trips

Throughout the life of the Project, the project manager's staff made frequent trips to each project forester's area. These trips were generally limited to an inspection of a single activity such as planting crews, HSI crews, site-preparation, forest management planning, record keeping, or office procedures. They were as much training opportunities as inspections. Because of the high turnover in project foresters, these limited functional inspections helped clarify the methods and policies used on the Project. The staff always prepared a memorandum to the project manager describing their inspection.

General Intergrating Inspection

In March 1962, the practice of making GII (General Intergrating Inspections) of each unit every 2 years was begun. One or more staff personnel from the project manager's office spent 3 or 4 days with the project forester covering each of his functions. Some of the items covered included:

-- Relations with the Soil Conservation Service, Agricultural Stabilization and Conservation Service, Mississippi Forestry Commission, Extension Service and forest industry.

-- Progress in tree planting, stand improvement, forest management planning, Tree Farm sign-up, etc. toward meeting the unit's goals.

-- Information and Education efforts

-- Work planning

-- Training program and training needed

-- Office facilities

-- Office procedures

-- Equipment maintenance and needs

-- Safety

-- Morale

-- Local purchasing

-- Supervision

-- Recordkeeping

-- Clarification of Project policy

-- Assistance needed from the project manager's office

-- Forest product market availability

A rough draft of the GII Report was prepared and discussed with the project forester on the last day of the inspection. From this discussion, a list of recommendations was developed along with the action required (by whom and a proposed completion date). The report was submitted to the project manager for his information, comments, and concurrence. Progress on meeting the recommendations was reviewed quarterly.

Records

Weekly planting reports and HSI reports were prepared each Friday morning and mailed to the project manager's office. There, the timber management specialist summarized the previous week's accomplishments and mailed a report back to the field units Monday night. For recordkeeping purposes, the work week began on Friday and ended on Thursday. These reports provided information on accomplishments, costs, man-days worked, seedling inventory and herbicide use. Figure 28 shows the 1965 Weekly Planting Record. The forms used were in a constant state of refinement as the field methods and organization changed. A constant effort was made to hold down the proliferation of paperwork.

Quarterly reports, figure 29, were submitted by each Project Forester to the Project Manager's Office. These reports summarized the Unit's accomplishments in planting, HSI, timber marked, forest management planning, site preparation, certification of timber harvesters, Tree Farm sign-up, 15-or 25-year plantation checks, and information and education activities.

Each project forester maintained a planting atlas so all Forest Service or SCS planting within that Unit's counties was recorded annually. This consisted of a list of the farms planted as well as a map showing the location of the planted area.

The annual progress of the Y-LT Project was reported to the Regional Office and to the Washington Office through Annual Planting Reports and Annual Reports. The Annual planting Report was first written for FY 1951 and continued through FY 1970. The Annual Reports, which summarized all activities, were started in FY 1954 and continued through FY 1983. Without these reports, it would have been impossible to prepare a Y-LT history.

	M Trees Planted This Week							
	FARMER		FORCE ACCT. (M)		OTHER (specify)			
Date	This Week	Total To Date	This Week	Total To Date	This Week	Total To Date		Balance on Hand

Seedlings received this week: _____ M on _____ form _____ Nursery

Seedlings transferred to other units: _____ M to _____ on _____

Seedlings received from other units: _____ M from _____ on _____

Weather During the Week: _____

Remarks: _____

County _____ Name _____

Title _____

Figure 28. —Weekly planting record.

WATERSHED _____ COUNTY _____ QUARTER_____ FY_____ UNIT_____ DATE _____

TECHNICAL ASSISTANCE

	Goals			This Quarter			FY to Date		
	M Trees	Acres	#Farms	M Trees	Acres	#Farms	M Trees	Acres	#Farms
1. Planting FA (GC-100% FA (CAS-Less than 100%) Non-Assistance YACC TOTALS									
2. HSI FA (GC-100%) FA (CAS-than 100%) TOTALS									
3. Timber Marked SWT (MBF) - Doyle Pulpwood (Cords) TOTALS									
4. Timber Sold SWT (MBF) - Doyle Pulpwood (Cords) TOTALS									
5. TM Crus./Desig. SWT (MBF) - Doyle Pulpwood (Cords) TOTALS									
6. Woodland Mgmt. Plans									
7. Wdld. Mgmt. Plans Revised									
8. Site Preparation	#Dams			#Dams			#Dams		
9. Cert. Timber Harvesters	No.			No.			No.		
10. Tree Farms									
11. Tree Farm Re-inspection									
12. Minority Contacts									
13. 25-Year Checks									

INFORMATION AND EDUCATION			
14. CFFP Materials	No.	No.	No.
15. Demons. & Exhibits			
16. Films Attendance			
17. Foreign Visitors			
18. Individual Contacts			
19. Meetings (ASCS, etc.)			
20. News Articles Prepared Published			
21. Publications Dist.			
22. Radio Programs Canned Spots Developed Spots			
23. Talks or Lectures			
24. Tours — Formal Attendance			
25. Tours — Informal Attendance			
26. TV Programs			

Figure 29. — Quarterly report.

CHAPTER 11

TRAINING

Most of the younger foresters assigned to the Y-LT as Project Foresters had very little tree planting experience. The early forestry aids qualified for their positions because of farming experience and some supervisory ability. During the first fall after their arrival, all newcomers were trained in tree planting techniques.

The first official planting school was held in Oxford in the fall of 1954. All project foresters and aids attended. The first day was spent indoors discussing all phases of the planting contracts and types of planting. The second day was spent in the field learning to plant. This school was followed in November by a meeting for 44 prospective bidders on contract planting at which contractual requirements were discussed.

The fall tree planting school remained an annual affair through 1981. The scope of these schools was considerably expanded as time went on. Besides a discussion of planting techniques, crew organization, motivation, safety, site evaluation, cooperation with other agencies, recordkeeping, transportation and goal setting were covered. See figure 30.

The 1956 Annual Report was the first to include a separate section covering training. The Project's understanding of the need for and the emphasis on training can be seen in the following quotation from this early report.

We try to offset the relative youth and inexperience of the new project foresters with intensive training and indoctrination. The first step is to provide a two-week overlap between the incoming and outgoing project forester. Then follows a day in the Project Manager's Office to get an overall picture of the Project. Specific schools are held throughout the year which help to rapidly bring the young forester up to a level where he can give an adequate performance with a minimum of supervision. A most effective training tool is the frequent project forester personnel meetings at Oxford, conducted by the project manager. These one day meetings not only provide a means of effective training on specific items but they also help to give a unity and coherence to the Project's forestry effort. With the project foresters scattered throughout the project area with little opportunity for interproject discussion, it is felt that these meetings are a prime factor in developing good morale.

A successful innovation this year was the two-day Business Management Workshop which was conducted by Raymond Bell, administrative assistant from the Supervisor's office, along with members of his fiscal staff. Far too often a forester's knowledge of office management lags far behind his technical know-how. This workshop developed the elementary features of good office management, procurement, property accountability, financial integrity, employment and record keeping, and did much to start the project foresters on the road to good business administration. A follow-up is being provided by office audits for each project forester, conducted by the office manager from the Project Manager's Office. Special mention should also be

Figure 30.—Project foresters, forestry technicians and aids, crew foremen and project manager's staff attending the 1966 Tree Planting Training Session. Project Manager V. B. MacNaughton is in the front row, second from the left.

made of the Hardwood Management School. This was conducted by John Putnam of the Delta Research Center.

Through the years, Project personnel took 150 or more different courses. Most of these are tabulated in appendix 2 under six categories: technical training for field operations; communications; personnel management; office procedures; administrative management and job-related skills. The early training centered on increasing technical skills and knowledge. Emphasis on managerial skills and self-development started in 1964.

In addition to formal coursework, Project personnel visited the Crossett Experimental Forest at Crossett, AR; the Delta Experimental Forest at Stoneville, MS; the Plant Materials Center at Coffeeville, MS; the Coweeta Hydrology Laboratory at Franklin, NC; the Ashe Nursery at Brooklyn, MS; the Waterways Experiment Station at Vicksburg, MS and the Tennessee Valley Authority. Foresters attended some of the Louisiana State University Forestry Symposiums; the Management of Planted Pines Symposium at Cordele, GA; and Regional Nursery Conferences. Advantage was taken of just about every opportunity to further the technical skills of the many young foresters.

Moreover, a 1965 Training Task Force Report identified the need for more training in speaking, reading, writing, and public relations. A good number of the workers joined Toastmaster's or took the Dale Carnegie Course on "How to win Friends and Influence People."

In 1967, all of the Project Units were placed on the mailing lists of the Southern, Southeastern, and Northeastern Forest Experiment Stations. All units were provided copies of the Southeastern-Southern Region Training Catalogue, which listed the available correspondence, seminars, conferences and short courses. All personnel were urged to take advantage of the available training opportunities in this catalogue by including one or more courses in their annual training plan. It was made clear to all that training was no longer the sole responsibility of leadership, but of all Project personnel.

Project personnel meetings for all full-time employees were held three or four times a year. Some idea of their value in training can be obtained from the subjects covered in a meeting held in 1967. They were work plans, the managerial bicycle, life and health insurance, retirement benefits, the 1968 Safety Program, the planting outlook, and problems from the field.

Forestry students, largely from Mississippi State University, were given summer employment. Some worked for as many as 3 years and gained valuable experience. And some later returned as project foresters. A number of men and women took courses at the University of Mississippi. Three foresters, Gilbert Massie, Charles Myers and Gary Yeck, obtained Master's Degrees in Public Administration from the University.

The most rewarding training of all was the opportunity to work for several years as a project forester. Nowhere else in the Forest Service has it been possible to obtain the diversity of experience in such a short time. Here, young foresters had their own unit to supervise. They had to deal with many other agricultural agencies and the general public, and were exposed to all phases of forest management. They also became acquainted with office procedures and had to engage in information and education work and meet foresters from various walks of life and from all over the world. It was a rewarding experience for all those who fully engaged themselves with the Y-LT Project.

Most project foresters were scheduled to return to a national forest after completing their Y-LT tour of duty. They were, therefore, given several work details back to a national forest to keep in touch with national forest administration.

With some 1,500 men and women planting millions of trees each year and driving over a quarter of a million miles, safe working and driving habits on the Y-LT received high priority. From the 1964 Planting Report, we learn that on Friday, November 13, 1964, the Project was presented a plaque and membership in the Safety Millionaires Club, the most exclusive club in the Department of Agriculture. During the period of January 1961 through October 1964, Forest Service Y-LT personnel had worked in excess of 1 million man hours without a lost time injury. In addition there had been 2,179,261 miles driven without an accident. Presentation of the plaque was made by Deputy Regional Forester H.C. Erickson and Assistant Regional Forester Douglass A. Craig.

CHAPTER 12

FIRE CONTROL

From the very start effective forest fire control was recognized as being vital in the Y-LT erosion control program. In the USDA Flood Control Survey Report for the Little Tallahatchie River (House Document No. 892, December 2, 1942) we find the following:

Fire control is the most effective and feasible measure for the entire watershed from the standpoint of attaining flood reductions. Without fire control the establishment of permanent vegetative measures would be uncertain and costly. since fire alone can destroy the effectiveness of practically any other flood control measure save those relating to cultivated land, its control should be considered as an insurance measure to safeguard the public's investment and insure that the greatest benefits will accrue from the program.

The periodic burning of woods and fields is common practice on private holdings throughout the watershed and generally is caused by burning debris, setting fires ostensibly to improve woodland grazing or carelessness in smoking, building camp fires, etc. Elimination of these frequent fires will, more than any other measure, do much to rebuild forest resources and site qualities and to encourage the reproduction and growth of commercially valuable tree species.

With over a quarter of a million people living in or travelling through the Y-LT area in 1948, the fire control problem was large. Most of the cases prosecuted, State and Federal, were from careless debris burners, hunters, and railroads. The incendiarist was elusive, and usually was responsible for the large acreage lost during periods of high fire danger. In spite of $500 rewards offered by the Mississippi Forestry Association and the North Mississippi Fire Prevention Association, there have been few arrests and convictions of the incendiary woodsburner. It has taken a large-scale cooperative effort and constant vigilance to reduce woods burning.

The Mississippi Forestry Commission is responsible for fire control on private lands in all counties which have levied a fire protection tax (2 cents per acre). In 1949, there were five counties within the Y-LT area which still had no organized fire protection on private lands. By 1954, the entire Y-LT private land area had organized fire protection by the Mississippi Forestry Commission. This was progress, but the degree of protection the poorly financed commission could offer was not sufficient to ensure survival for the millions of pine seedlings planted each year. The long-range plan was to use the Forest Service fire code principles to strengthen the Commission's fire control capability. There was no intention to take over fire control. The objective was simply to intensify and carry on an effective fire prevention program.

In those days, the State budget was stretched to the maxium to cover the counties requesting fire protection. The Survey Reports indicated that State funds would not be able to provide the degree of needed fire protection. Therefore, in approving the reports, Congress had authorized the use of Flood Prevention funds to help the Commission achieve the goal set in the Report. This goal was an annual burned area of 0.5 percent or less, but many authorities felt this was still too high to satisfy landowners who weren't sure their new pine plantations would ever reach maturity. Consequently, efforts were aimed at an annual 0.1 percent burned area.

The Y-LT Fire Prevention and Suppression Effort

Fire control activities became an integral part of each project forester's work program. There were three major divisions of the fire control effort: prevention, presuppression; and fire suppression. At the start, the Forest Service was to assist only in emergencies where the Commission could not handle the situation. These emergencies usually happened during periods of high fire danger when numerous fires occurred or when a fire "got away" and threatened to become a major conflagration.

Fifteen years of fire control experience on the Holly Springs National Forest indicated that the local people's attitude was the key to fire prevention. The number one cause of forest fires here was careless debris burning. For this reason, the United States Department of Agriculture and Mississippi Forestry Commission workers carried out an intensive public education program to help prevent fires on Y-LT land. An excerpt from the Annual Report of 1954 highlights the efforts to "tell the story" in that year: "The ideas of better land use and fire prevention are contrary to old customs and philosophies. The concept of any obligation to society in land ownership smacks of socialism and is not easily accepted by the descendents of the rugged pioneers who carved out a home in this wilderness 150 years ago. Rebuilding a worn-out land does not have the glamour of conquering a new land. Every known method of mass education and advertising is needed — not once, but day after day, year after year."

A summary of the education efforts for 1954 included the following accomplishments:

1) 416 conservation news articles in local papers

2) 337 showings of conservation films to some 18,000 people

3) 96 speeches to 3,000 people

4) 381 radio programs on conservation

5) 12 appearances of project foresters on TV programs in Memphis

6) 93 forestry demonstrations

7) 50 show-me trips

8) The Forest Service, SCS and MFC personnel cooperated in an all day Tree Farm demonstration on the McElroy farm in Union County. Tree Farm certificates were awarded to 38 new tree farmers.

This and similar educational activities continued with varying intensity throughout the 36 years of the program in the Y-LT area. It did not stop all fires, but it did help develop awareness of the progress in flood reduction and better land use throughout the project area.

The decade of 1952 to 1961 began with 1,524 fires burning 30,965 acres. In 1953, we lost 40,152 acres. By 1961, however, the record was 548 fires with 5,426 acres burned. We also learned that the 'bad years" coincided with a less than normal rainfall. It was apparent that the fire suppression forces on the Project had to be strengthened to cope with periods of high fire risk. Therefore, with matching funds from the Project during the next five years, the Mississippi Forestry Commission received the following additional equipment:

-- Seven truck-tractor-plow units (with radios); see figure 31.

-- Six slip-on Panama pump units

-- Six front mounted blades for medium tractor units

-- Three heavy brush - bog discs

-- Increased use of State airplane detection

-- Increased periods of tower manning

Figure 31.—Truck-tractor-plow units such as this one were provided the Mississippi Forestry Commission by the Y-LT Project to strengthen fire control efforts.

Some 35 community fire boxes were stationed at local stores or industries with a telephone and a nearby source of manpower. These were second-line emergency crews.

Each Project forester's pickup was equipped with a two-way radio and a fire tool box. Planting crews also had radios and fire tool boxes. These second line crews often reduced travel time to a fire even though Commission crews mopped up after the initial attack and control. The Project purchased a truck-tractor-plow unit equipped with a radio which was stationed at the Oxford Work Center.

Once in awhile someone thought we were doing a good job — and said so. The following is from an editorial from the *Oxford Eagle* of September 17, 1959, entitled "A Decade of Progress."

> Up to ten years ago, Lafayette County was running near last in the statewide movement to more productive forest land. Today, it is being admiringly referred to as the "Reforestation Capital of the World." What brought about such a delightful and sudden change?
>
> For years Lafayette County woodlands were unproductive. Badly eroded, barren hillsides dotted the scene. A few pine timber stands were in evidence but scrub hardwood bushes were about the nearest thing to a timber stand to be found. Wildfires reaped heavy damage from struggling timber growers. Because of woods fires there was little incentive for the landowner to plant trees. The risk was just too great.
>
> But in 1950, the forest acreage protection tax was voted in by an alert Board of Supervisors and almost immediately the forestry business in Lafayette took an upward swing. More trees were planted. Landowners began showing increased interest in timber growing. Tree planting was no longer a poor risk.
>
> It was not long before young timber stands appeared above the grass. Timber stand improvement work gained momentum and the general overall forestry picture took on a brighter hue.
>
> Today forestry or the growth of timber is known to be very vital to the economy of Lafayette County.
>
> All phases of timber management are important to successful timber growth but Lafayette Countians have long ago agreed that protection from wild fire is the most essential phase of all. Without fire protection, the timber grower could look for little hope of success.

In 1962, R.M. Conarro, the first supervisor of the Mississippi National Forests, was employed as a consultant by the Mississippi Forestry Commission to plan a fire prevention program in designated counties within the Y-LT area. He was awarded the Silver Smokey Bear Award for his contributions to fire prevention in the South. During the next 5 years he wrote an 80-page *Fire Prevention Contactors Handbook*, which was used to train the local men used as contactors. This handbook was also used throughout the Region. Additionally, he wrote a complete Fire Prevention plan for the Y-LT Project. He also trained and helped supervise the work of some 100 "contactors" who worked in the "hot areas" of 11 different counties.

The work of these contactors resulted in a 51 percent reduction in fire occurrence in the 11 counties. The State Forester's Office had this to say about the Contactor Program in Holmes County:

> Holmes County is rapidly losing its reputation as a "hot county." The area has been laboring under this thermal description for many years due to the high quantity and intensity of destructive wildfires which have annually swept across the local scene.
>
> The current cooling trend started back in the winter months of 1964 when foresters of the Mississippi Forestry Commission and the Yazoo-Little Tallahatchie Flood Prevention Project pooled their resources and embarked on a new concept in forest fire prevention activity.
>
> Special "envoys" have been hired each year during the high fire-hazard months to carry on a person-to-person program of fire prevention activity in the communities where they live. Through yearly training sessions they have been supplied with facts about valuable forestry and other agricultural programs, safe debris burning procedures, and additional helpful information which they can pass on to their neighbors in the rural communities. The "Fire Prevention Contactors" (their official title) are required to visit with, and assist the families in their assigned areas in every way possible — especially in respect to safe outdoor burning. Instead of admonishing their friends not to burn, these "envoys" are emphasazing that outdoor burning must be done with extreme caution.
>
> Through the work of these contactors, many Holmes County landowners now are cooperating more closely with the Forestry Commission in reporting their intention to burn debris on their own land — a vital aid to the rural fire control program, since it eliminates a lot of "false alarm" trips by fire crews which perhaps may urgently be needed on a dangerous wildfire in another part of the county. Often arrangements can be made for fire crews to provide "standby assistance" to landowners who have brush or briar-covered areas to burn off.
>
> Perhaps the best testimonial which could be offered in behalf of this new fire prevention program is the record of dramatic reduction in the number and size of wildfires occurring within the areas of the county where the program has been in effect.

In 1963, nearly 21,000 acres of timberland burned in 1,326 fires on the Y-LT. Included in this total were 2,700 acres of pine plantation. Protection again was emphasized, and some positive steps taken to strengthen and intensify fire control. Among these were:

1. The purchase and installation of 31 mobile radios in project forester trucks and four staff vehicles.

2. The purchase of a truck-tractor-plow unit to be stationed at Oxford for use by Y-LT personnel under emergency conditions. This truck was also equipped with a radio.

3. The training of 11 three-man truck-tractor crews and 11 prospective lookout tower men from the Y-LT as possible emergency relief personnel for the Mississippi Forestry Commission within the Project.

4. The development of a new plan for making fire protection and prevention very specific and personal with a Conservation Fire Plan for each farm. This plan would be an amendment to the SCS Farm plan. It was developed from a survey by a forester of all risks and hazards affecting the land and buildings. The write-up to accompany the map covered safe methods of using fire on the farm, elimination, where possible, of hazards, and possible construction of travelable fire breaks.

5. The participation of Project personnel in a forest fire research project in Carroll, Grenada, and Calhoun counties conducted by the Southern Forest Experiment Station under a contract with Mississippi State University's Social Science Research Center. This was a fire-related attitudes and characteristics study, first phase of an extended research project focusing on attitudes, knowledge, and practices of landowners and other users toward the forest and woodsburning.

6. The efforts of the North Mississippi Fire Prevention Association, a group of landowners in 10 counties, to intensify fire prevention with radio programs and a $500 reward for conviction of a woodsburner.

Fire Access Roads

In 1951 the Project initiated a program of firebreak construction. The firebreaks were laid out by the project forester and the landowner, who then cleared the brush, disked, and seeded them to grass. These fire breaks helped in presuppression and shortened travel time on fires occurring in pine plantations.

The Fire Access Road Program turned out to be one of those "something for everybody" programs. The basic concept is to get an extensive network of these motorways in each county generally along ridgetops, using woods roads, or motorways through and near pine plantations. The Soil Conservation Service, USDA Forest Service, Mississippi Forestry Commission, plus the landowner all had a hand in planning and installing those routes. A fire access road represents the ultimate in multiple use. Fire control, timber harvesting, wildlife and recreation are all helped. See figure 32.

The Fire Access Road is a ridge route 15 feet wide with water bars and a few lead off ditches vegetated with fescue, rye grass, and grains. This vegetation is planned to (1) provide a green cover during the fire season as an aid in backfiring and (2) wildlife food. Wildlife also benefits from installation of food plots at varying intervals along the roads. These plots varied from 1/8 to 1/4 acre in size and are built to take advantage of natural openings or flat places in the topography. By 1980 the total of Fire Access Roads had reached approximately 1,900 miles.

The actual installation is a cooperative job between the Soil Conservation Service and Forest Service. The Mississippi Forestry Commission prepares the seedbed, for which they are reimbursed by the landowner. Fire control, recreation, and wildlife were the chief early beneficiaries since most plantations were not yet merchantable.

Figure 32. —Firebreaks provide access for quail hunters.

For those who want a more intensive system of these breaks, there is a new Mississippi ACP practice which provides about 50 percent cost sharing. The biggest problems encountered thus far are lack of sufficient money, and owner maintenance after original construction.

Prescribed Burning

Prescribed burning is an accepted forest management practice in south Mississippi, especially on national forest and industry lands. Its use on the Y-LT Project, however, was considered untenable because it could have interfered with the basic objectives of flood prevention and erosion control. During the past decade, prescribed fire has been used with great care — and double the usual cost — in litter reduction, site preparation, and wildlife habitat improvement on the Holly Springs National Forest. The average annual acreage of prescribed burning went from 200 acres in 1974 to over 9,000 acres in 1983.

The Mississippi Forestry Commission also got into the act in recent years with an average burn of 4,171 acres, mostly on private lands, during 1981 to 1983.

Cooperative Action

The Holly Springs National Forest, located in Benton, Lafayette, Marshall, Tippah, Union and Yalobusha counties, was established in 1936. Although there are only some 146,000 acres of government land within the purchase unit boundary, there are 520,000 acres within the Proclamation boundary. Ninety-eight percent of this area is inside the Y-LT Project. With three CCC camps on the forest from 1935 to 1942, forest fires were quickly brought under control. After the Y-LT Project was activated in 1948, cooperation in fire suppression between the Mississippi Forestry Commission, the Holly Springs National Forest, and the Y-LT became very successful. In fact, the 10-year average for 1974 to 1983 was 37 fires and 416 acres burned.

Besides the National Forest, the Federal government is represented on lands within the Y-LT Project by the Corps of Engineers. They have offices and work centers at Arkabutla, Enid, Grenada, and Sardis reservoirs. On the four reservoirs, there is a total area of 153,700 acres between the conservation pool and flood pool levels. In the 1950's, the Corps contracted with the Forest Service to plant several million pine seedlings on gullied land above the flood pool levels.

In 1960, an act was passed by the 86th Congress (HB 9377) to provide for the protection and the development of forest or other vegetative cover on under control of the Corps of Engineers. This bill, sponsored by then Congressman Frank Smith of Mississippi, speeded up the establishment of a fire suppression force at each of the four reservoirs. Detection is furnished by Mississippi Forestry Commission towers or planes. When a fire occurs, the Commission notifies the reservoir crew, but usually takes initial action.

Another highly effective activity by the MFC in reducing debris fires was the plowing of firelines around garden spots and small pastures, which are usually burned each year. The landowners had to request the service and were charged a nominal fee for the plowing and burning. Over 600 landowners requested the service in 1973.

Early in the 1970's the county rural fire units became an important asset in controlling fire. Funded in a small way with Federal money distributed by the state forester, these volunteer fire departments put out many of the grass and woods fires each year. Their mission was to control any fire threatening homes and personal property. They were particularly effective in areas of "urban sprawl" that do not qualify for assistance from city fire departments. In Lafayette County, for example, in 1982 (a dry year) the rural fire units fought 100 house fires, 33 automobile fires, 159 grass and woods fires and 19 other fires. The Mississippi Forestry Commission fought 31 grass and woods fires in Lafayette County that year.

After many years of concentrated effort the goal of 0.1 percent or less acreage burned by wildfire was achieved in 1971 when only 2,432 acres were lost out of 2,589,570 acres protected (table 6).

With the thousands of acres of pine plantations, however, reaching commercial maturity, the value of the forest not only for controlling runoff but in dollars is rapidly rising. The need to maintain a 0.1 percent (or less) of acreage burned is greater today than it was 30 years ago since much greater values are involved.

*Table 6. —Fire Statistics (1952-73), Yazoo-Little Tallahatchie Watershed**

Year	Fires	Burned acres	Area acres protected	Plantation acres burned	Percent burned
1952	1524	30,965	1,548,000	-	2.00
1953	1873	40,152	1,548,000	-	2.50
1954	1291	18,982	1,548,000	-	1.20
1955	639	6,365	1,950,000	-	0.34
1956	1092	14,229	1,950,000	-	0.55
1957	433	3,440	2,589,570	-	0.133
1958	576	6,458	2,589,570	-	0.249
1959	964	9,005	2,589,570	763	0.348
1960	915	14,923	2,589,570	1711	0.576
1961	548	5,426	2,589,570	367	0.209
1962	969	11,700	2,589,570	1756	0.450
1963	1326	20,809	2,589,570	2762	0.82
1964	640	4,392	2,589,570	1102	0.170
1965	580	4,503	2,589,570	1100	0.170
1966	844	9,829	2,589,570	2498	0.38
1967	621	6,962	2,589,570	1644	0.269
1968	414	3,621	2,589,570	431	0.140
1969	493	4,836	2,589,570	1346	0.126
1970	446	4,836	2,589,570	951	0.187
1971	323	2,432	2,589,570	-	0.094
1972	341	2,714	2,589,570	-	0.105
1973	211	999	2,589,570	-	0.039

* Includes fires in Holly Springs National Forest, Arkabutla, Enid, Sardis and Grenada Reservoirs.

CHAPTER 13

INFORMATION AND EDUCATION EFFORTS

The glue that held the Y-LT together, producing results unprecedented in land restoration, was cooperation. Agencies at the local, State and Federal level were involved. Landowners; communities; and industry all worked together and not only were the goals accomplished, the Project became known as a working model of cooperation. This was not happenstance, nor a spontaneous occurrence; a tremendous amount of work was required.

The 1942 Flood Control Survey Report of the Little Tallahatchie states: "The private conservation benefits will result from increased farm income brought about by a stabilized and diversified farm economy . . . . The estimated benefits, plus the virtual assurance of a continued existence for agriculture, will play an important part in obtaining the cooperation necessary to make the proposed measures effective." That sounded reasonable. But it was written by someone unacquainted with the farmers of north Mississippi, someone unaware of the fears, prejudices and skepticism of the people behind the plows.

The first information and education forester, A. B. Curtis, was assigned to the Project in 1969. This was 20 years after the Project began, but the date is misleading. Information and education actually started when the Project did. Since no specialist was assigned, all personnel were expected to contribute whenever and where possible. And that was every day. Vic MacNaughton said it well in the 1955 Annual Report: "the ultimate success of the project depends on how well each worker performs his I&E assignment. Not all men are gifted radio performers or inspiring writers, but every one, no matter what his position or educational level, can make his I&E contribution. The Forest Service project foresters devote approximately 15 percent of their total time to educational work. In-bred land-use philosophies are hard to uproot, but until landowners develop a sense of moral obligation to society and the ownership of land, the progress of better land use will be slow."

There is some question about how many landowners ever developed a sense of moral obligation to the land. There is, however, no question that an increasing number every year joined the fight to rehabilitate their land. It may have been the profit motive, or keeping up with the Joneses, or simply trying anything new when all else had failed. Regardless of the motivating factor, it was the everyday I&E struggle of Y-LT personnel who made it work. They talked to landowners as many as 50 times. They argued and cajoled to get their points across. And they never stopped.

In fact, the men in the field contributed much to the word-of-mouth dissemination of Y-LT information. The planters, crew chiefs, the forestry aids, and technicians were local people, farmers themselves. Many of them had CCC or SCS training before joining the Forest Service. When they saw what was happening to the land through their own efforts, they were not reluctant to talk about it to their friends and neighbors. When technicians talk of the old days, their stories reflect the confidence they gained in Forest Service procedures. The stories also show the extent to which they went to transfer that confidence to reluctant landowners.

One of the most difficult kinds of programs to evaluate is I&E. Don Gerred, who was assistant project manager throughout the 1950's, recalled, "We tried to always have a strong I&E program. But somehow I guess we sometimes missed the boat. Either people weren't listening, or they didn't believe what they heard, or they didn't understand what they heard. Along about '56 or '57, the Southern Station sent a crew here to survey the attitudes of local people towards the project. About the only ones who knew what we were doing were those in the active watersheds, and even there it was startling how few people realized our goals, and that we could and would help."

Although the survey mentioned by Gerred was quite negative, more and more people each year sought assistance from the Forest Service's Y-LT offices. Something was working.

In the first regular annual report written on the Y-LT for 1951, Project Manager Ivo Miller started the narrative: *"The appreciation of the value of good forest management as an aid to soil stabilization and improvement of the hydrologic condition of the soil by the local people within the watersheds is becoming evident* ***in the rapid increase in the requests for timber management assistance received from the landowners."*** [emphasis added]

That, of course, is a true measure of I&E effectiveness: Are people responding to the message? Elsewhere in the 1951 report, Miller said, "One District Ranger has stated that the educational efforts of one (Y-LT) project forester over a period of two years, largely through moving pictures, personal contacts, and talks cut the annual fire occurrences in Calhoun County from nearly 200 fires down to only an occasional fire."

Fire prevention, always important, was necessarily a crucial target of the early I&E program. The problem of wildfire was then, as it is today, a complex I&E pursuit. Its goal must be more than simply calling attention to the dangers and recommending methods of avoidance. Ingrained practices handed down for generations had to be eliminated or changed. The 1942 Survey recognized the situation.

Statistics indicate that Y-LT personnel pursued all these problems diligently. Consider, for example, this summary from the Annual Report of 1954. "Three hundred and seventy-one newspaper articles were written by the project foresters and printed in local papers. In addition, numerous paid advertisements were obtained from banks, seed and implement dealers, and lumber companies, and printed in local newspapers. These advertisements covered subjects such as proper land use, fire prevention messages, recommendations for TSI (timber stand improvement), and marking sawtimber and pulpwood stands before cutting, and write-ups of the ASC specifications for forestry practices."

During "Land Use Emphasis Week," special programs were prepared and presented to civic clubs, church groups, and schools. Exhibits were prepared and displayed in store windows. One large exhibit was set up at the museum in Oxford, and school children were taken to the museum and shown the displays. Special radio programs were presented and one TV program was given over WMCT in Memphis.

Some of the most effective tools produced by the I&E unit were brochures on practical forestry matters. One of the most used was a booklet on marking and thinning Y-LT pine plantations. There were trifolds describing thinning demonstration areas, the southern pine beetle, marketing, and other phases on land management.

The local newspapers and radio stations were very supportive thru the years but none more so than Nina Goolsby, Jesse Phillips, and the staff at the Oxford *Eagle*. Their service was above and beyond the call of duty. Our success was also theirs.

From the very first, efforts were made to give the Project nationwide publicity. An early article about the Y-LT appeared in the *1955 Yearbook of Agriculture*. Two Forest Service booklets, *The Forests Return to the Yazoo* and *New Forests on the Yazoo*, were given widespread distribution. The *American Forests* magazine printed two stories about the Project. These and many other articles attracted large numbers of visitors interested in erosion control techniques. They came not only from all over the United States but from 44 foreign nations. The more than 400 foreign visitors represented the countries named in appendix 2.

During the closing years of the Project, most I&E efforts were directed toward technology transfer to other agencies, and an added emphasis on forest management directed toward landowners. In the final analysis, most people who worked on the Project over the years gave greatest credit for selling the Y-LT story to the one-on-one, daily contact of the men in the field with landowners.

CHAPTER 14

THE LAST DAYS

Forest Service activities during the last years differed tremendously from the first and middle years. Several events led to rapid changes that had to be made. The 1979 General Program Review conducted in the Southeastern Area (SA), made two specific program recommendations, 13(b) and 13(c), concerning the Y-LT Flood Prevention Project.

Recommendation 13 (b): An inventory of the remaining critical area planting on the Y-LT should be completed as soon as possible so that key areas can be planted during the remaining period.

Action: Director, SA, to have an inventory plan completed by October 1, 1979.

The Soil Conservation Service in conjunction with the Forest Service made an intensive survey of the 19-county area for critically eroding land that needed reforestation. Approximately 26,000 acres were identified as meeting SCS (MS-3) guidelines for tree planting. The plan for tree-planting completion that was developed called for completion of tree planting by the end of FY 85. This was part of the phase-out plan for the Project approved by the Department of Agriculture in October 1980.

Recommendation 13 (c): Plans were to be developed on how to schedule the possible completion of the Y-LT Flood Control Project by 1985. This should include plans to absorb the field staff into appropriate National Forest and State and Private Forestry positions servicewide.

Action: Director, Southeastern Area, was to develop Y-LT completion plan in cooperation with the Area Planning and Development staff in the Washington Office by January 1, 1980.

The plan was approved by the Washington Office in October 1980. It called for an orderly phase-out, county-by-county, as tree planting was completed and as the Mississippi Forestry Commission was able to assume responsibility for technical forestry assistance. All phase-out activities were to be coordinated with cooperating agencies and the Soil and Water Conservation Districts.

The Office of the Inspector General's inspection, conducted on the Y-LT from September 1980 through June 1981, disagreed with the SCS's interpretation of MS-3 critical area qualifying for tree planting. Recommendations in their report, dated March 11, 1982 disallowed any tree planting beyond the FY 1982 planting season.

The last Y-LT tree was planted in Carroll County. Field work henceforth concentrated on timber management assistance. The demand for timber management plan preparation remained about the same; however, the request for pulpwood marking continued to rise.

Morale of personnel on the Project began to decline as closing time approached. The name of the game was change. Forestry technicians who had always been involved with large planting crews were now working alone. They felt the impact more than the other personnel. For some, the Y-LT was the only adult working life they knew, and the end of the Y-LT era was in sight as well as the end of Forest Service careers.

To compound the impact, landowners within the Project were facing a greater need for timber management assistance. Plantation owners, many having never sold a tree in their life, needed plantation management advice. Foresters for the newly established forest industries were moving across the watersheds, procuring wood to feed their hungry mills.

According to plan, counties and field offices were closed, one by one. Full-time employees were reduced from a maximum of 53 down to 6 in 1985. As direct landowner assistance was terminated, personnel in adjoining counties continued to provide technical assistance to cooperating agencies and Soil and Water Conservation Districts in the phased-out county.

The main thrusts during the phase-out period were of technology transfer in critical area treatment with pine, watershed plantation management, and working with small woodland owners. This information was made available to other agencies, to landowners and to all interested in preserving the land and promoting good forest management in north Mississippi.

During the last years of the Y-LT Project, the responsibilities of the administrative officer and his staff cannot be overlooked. An orderly close-out was conducted. Some 20 professional foresters transferred to locations throughout the Southern Region of the Forest Service. Some 18 forestry technicians retired, and other personnel were placed in various agencies. Fourteen field offices were closed as well as the Project Manager's Office. To accomplish this closure, 50 Forest Service vehicles plus tons of furniture, equipment, property and records had to be disposed of. All these moves were carried out smoothly and according to regulations.

These were the last years and the last days. After 37 years, the Forest Service's part of the Yazoo-Little Tallahatchie Flood Prevention Project had ended. A voice from a green pine hillside seemed to say "Your mission was accomplished. Thanks for a job well done."

But the Soil and Water Conservation Districts, the Soil Conservation Service, the Agricultural Stabilization and Conservation Service, the Extension Service, the Mississippi Forestry Commission, and the Holly Springs National Forest are still in business. Forest fires will be fought, some trees will be planted, and some timber will be marked. What is gone is the "acceleration money" from Washington which made the Y-LT Project possible. Gone is the intensity of the conservation effort on these private, nonindustrial forest lands.

On September 16, 1985, a final tribute to the Y-LT Project was sponsored by the Mississippi Association of Soil and Water Conservation Districts and hosted by the University of Mississippi. Some 200 Y-LT workers and friends listened to speakers review the Y-LT accomplishments of the past 37 years and pay homage to Congressman Jamie Whitten for his dedication and support. It was the last hurrah for some 200 present and past project foresters and technicians. The Oxford *Eagle* issued a Special Edition and on the front page was a picture of the old man with a planting bar and a bucket of trees — the Y-LT logo for the past 25 years — ever since Mayor Pete McElreath proclaimed Oxford to be The Reforestation Capitol of the World. See figure 33.

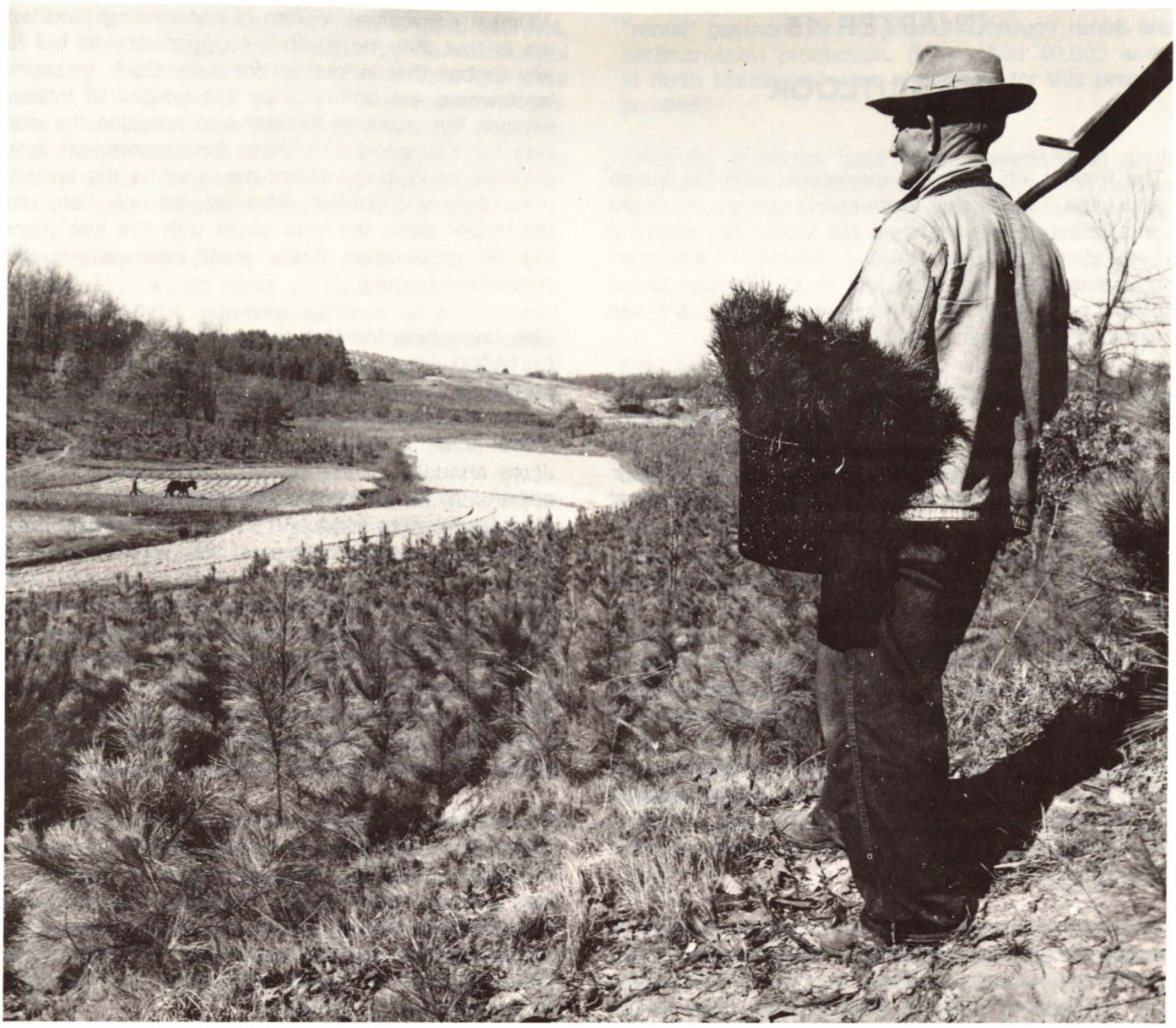

Figure 33.—W. C. Turpin of Lafayette County prepares to plant more trees on the hillside while his brother Fred plows in the valley — an outstanding example of good land use.

CHAPTER 15

THE OUTLOOK

The Project left the land, landscape, and the Yazoo and Little Tallahatchie Watersheds greatly improved and tremendously changed. No longer is everything dependent upon agriculture. A diversity of industries have moved in, including four major forest products plants and many small furniture factories. We can expect this change to continue.

Furthermore, the pressure to harvest prematurely the Y-LT plantations is constantly increasing. At the conclusion of the Y-LT's tree planting program in 1982, the net acreage reforested totaled 621,341 acres. Based upon the surveys made of the plantations at ages 15 and 25, it was estimated that there were 430,000 acres of manageable pine growing in 1984. Of this, a little more than 100,000 acres was owned by industry.

Clearcutting pine plantations 35 to 45 years old is an acceptable practice if these areas are promptly replanted. Unfortunately, all too often replanting is not done. Some clearcut areas promptly revert to low-quality hardwoods because the pine plantation often acts as a nurse crop for seedlings of light-seeded hardwoods. Many hillside clearcuts begin to erode again as grasses, weeds, forbs, and hardwood seedlings slowly invade the area.

Good markets are needed to stimulate interest in forest management. As these markets develop, competition for wood increases, and many landowners are tempted to clearcut. Past surveys have shown that many plantation owners are old and poor. Such owners may easily succumb to offers to receive twice as much for "clearcut" wood as for "thinned" wood. Then, too, as owners die their heirs want to get top dollar for the timber. It is an unfortunate truism that land and timber sold separately will bring more than when sold as a unit.

The paper mills, sawmills, plywood plants and waterboard plants all have a stake in managing the plantations for sustained yield. But procurement people, pulpwood dealers, and independent loggers and pulpwood cutters must obtain wood to survive. Most of the large companies have landowner assistance programs in which their foresters help landowners manage their forest holdings. Georgia-Pacific, International Paper Company, Louisiana-Pacific, Westvaco, and Weyerhaeuser all have management assistance programs. Champion International does not, although they will provide seedlings to replant the land they cut.

All most companies require of cooperating landowners is that they be given the opportunity to bid on any timber that is put up for sale. Even so, some landowners are bothered by this conflict of interest wherein the assisting forester also provides the markets for the wood. For these landowners, an independent consulting forester may well be the answer, particularly a consultant who will not only help with the timber sales but also assist with the tree planting, site preparation, timber stand improvement, and prescribed burning.

One consulting forester on the Y-LT land has 9,000 to 12,000 acres of plantations under management; another has 3,000 to 4,000 acres. The largest vendor of forest management services in the area plants 3,000 acres a year and deadens 3,000 to 4,000 acres annually for site preparation. There is a great opportunity for more consulting foresters in this area. Most landowners need and want a lot of "hand holding," and a consultant is most able to do this.

When the future of the Y-LT area was first considered, the simple solution was for the Mississippi Forestry Commission to expand its services to meet the demands for forestry assistance. To accomplish this, however, the Commission would need to double or even triple their county staffing. Neither the economic or political outlook at this time is favorable.

By law, county foresters cannot spend more than 3 days with a landowner and must charge for marking sawtimber. They are required to earn 15 percent of their budget, which virtually mandates that they work with the more affluent people. In addition, many local landowners call for assistance after the woods have been clearcut. Absentee landowners are generally more receptive to assistance.

Since 1967, forest land prices have increased more than tenfold. Land that sold for $25 to $50 per acre then is now offered for $500 to $750 per acre. Those able to purchase lands at these inflated prices, all too often try to recoup part of the purchase price by selling all or part of the merchantable timber. Many of the purchasers such as doctors and lawyers have rural backgrounds and want to become gentlemen farmers. Tree farming appeals to only a few so the land is cleared for cattle raising. There is little money in cattle raising, but it offers a change of pace. Every time land changes hands, however, the timber on it is in danger of being clearcut. This is especially true if the land falls into the hands of speculators, who frequent the county courthouse picking up land at tax sales or in arrears on loan payments.

The major agencies and organizations that cooperated with the Forest Service should intensify their efforts in support of forestry. Because those organi-

zations are largely concerned with farming interests, it will take an aggressive posture by the Mississippi Forestry Commission to coordinate and stimulate action. The Extension Service is responsible for providing an active information and education program. But there is a limit to the effectiveness of any education program because a great many landowners are absentee, or elderly, and are not easily reached.

Organization of county forest landowners associations, which would serve as marketing cooperatives and employ the part-time services of a consulting forester, has been proposed. The idea is an attractive one. Cooperatives, however, have not been very successful. Such a cooperative would require strong leadership among the landowners, an energetic forester, and cooperation from industry.

Cost-share programs are needed as an incentive to plant trees on the Y-LT Watersheds. Mississippi's Forest Resource Development Program and the Federal Forestry Incentive Program continue to pay 50 percent of forest tree-planting cost, while the Federal Agricultural Conservation Program pays 65 percent. These programs must be continued. In addition, measures to obtain more natural regeneration of pine must be promoted by foresters. The Conservation Reserve Program, which pays 50 percent of the cost of planting eroding cropland plus an annual "rental" payment for 10 years will reduce runoff and sedimentation production. (More than 40,000 acres in north Mississippi were signed up for this practice in 1986.)

Recently, Westvaco sold all its forestland in north Mississippi. International Paper Company, Tennessee River Pulp and Paper Company, and the Weyerhaeuser Company also have some of their land for sale. This will increase the market for wood grown on small ownerships and also intensify the problem of premature clearcutting.

The Louisiana-Pacific Corporation and Weyerhaeuser continue to operate large sawmills with chipping headrigs. Georgia-Pacific has an oriented-strand board mill at Elliott. Memphis Hardwood Flooring Company operates large sawmills in Bruce and Potts Camp. Mississippi Chemical Corporation has announced the construction of a newsprint mill at Grenada. The furniture industry in north Mississippi rivals the production of the North Carolina furniture industry. Thus, markets for timber are strong and getting better. It is up to the forestry profession to see to it that the forests on the hillsides in the Yazoo and Little Tallahatchie Watersheds remain productive and that row cropping is confined to the bottomlands.

The climate for forest management is good and can only get better.

APPENDIX 1

Statistics on the Yazoo-Little Tallahatchie Watersheds

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Table 7. — A summary of tree planting, FY 1948 to FY 1982; acres planted under erosion control programs by Project personnel or under technical assistance 51

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Year	YACC	Free seedlings only	ACP	SCS contract	FS contract	FA 100%	FA-Less than 100%	Soil bank	Total net acres	Total acres replanted
1948	—	175	127	14	—	—	—	—	316	—
1949	—	2	919	653	—	—	—	—	1,574	—
1950	—	11	2,308	2,054	—	—	—	—	4,373	240
1951	—	518	6,347	2,951	2,170	—	—	—	11,986	411
1952	—	1	6,476	1,304	1,008	—	—	—	8,789	833
1953	—	2,254	8,883	1,955	6,910	—	—	—	20,002	2,487
1954	—	980	10,339	1,504	2,995	904	—	—	16,722	2,820
1955	—	680	11,951	630	3,148	3,309	—	—	19,718	6,960
1956	—	605	20,691	4,829	3,004	4,341	—	—	33,470	3,694
1957	—	1,158	21,489	1,053	688	8,475	—	656	33,519	5,716
1958	—	1,215	23,916	32	1,939	11,502	—	1,641	40,245	7,594
1959	—	1,640	24,260	61	2,008	11,330	—	605	39,904	10,067
1960	—	4,335	22,138	—	1,640	11,790	—	—	39,903	8,107
1961	—	3,493	15,336	—	2,868	13,196	—	—	34,893	8,548
1962	—	3,589	11,184	—	2,934	13,620	—	—	31,327	4,456
1963	—	1,574	8,104	—	3,783	15,742	—	—	29,203	6,403
1964	—	1,635	6,425	—	3,163	12,738	—	—	23,961	11,563
1965	—	1,773	4,856	—	2,937	12,226	—	—	21,792	9,199
1966	—	2,161	3,670	—	2,584	13,706	—	—	22,121	9,666
1967	—	692	3,110	—	—	14,136	—	—	17,938	11,520
1968	—	983	2,906	—	—	16,826	—	—	20,715	2,428
1969	—	1,394	2,721	—	—	11,164	—	—	15,279	2,554
1970	—	2,077	2,290	—	—	16,568	—	—	20,935	1,875
1971	—	3,373	2,561	—	—	13,580	—	—	19,514	2,316
1972	—	2,747	1,554	—	—	12,907	1,741	—	18,949	2,645
1973	—	3,948	236	—	—	7,707	1,656	—	13,547	4,263
1974	—	1,299	—	—	—	5,713	2,354	—	9,366	4,201
1975	—	1,170	109	—	—	6,220	2,126	—	9,625	3,040
1976	—	985	—	—	—	7,146	3,887	—	12,018	1,188
1977	—	1,544	—	—	—	4,367	1,476	—	7,657	3,312
1978	609	1,818	—	—	—	2,318	554	—	5,119	3,987
1979	953	1,219	—	—	—	3,198	364	—	5,724	2,866
1980	1,541	499	—	—	—	2,533	269	—	4,842	3,076
1981	1,313	410	—	—	—	1,764	311	—	3,798	2,178
1982	2,196	41	—	—	—	86	174	—	2,497	432
Total	**6,612**	**51,998**	**224,906**	**17,040**	**43,779**	**259,112**	**14,912**	**2,902**	**621,341**	**150,645**

Table 8. —Summary of tree planting by others than Y-LT staff, FY 1948 to FY 1982

Year	Forest Hydrology Lab.	Corps of Engineers	Miss. Forestry Commission	Industry	Holly Springs Nat. Forest & LU - 21	Total, net acres	Grand total net acres[1]	Grand total M trees planted[1]
1948	—	—	—	—	700	700	1,016	1,039
1949	—	—	—	—	1,833	1,833	3,407	3,642
1950	—	—	—	—	1,159	1,159	5,532	5,972
1951	—	581	—	—	588	1,169	13,155	13,005
1952	—	619	—	—	517	1,136	9,925	15,713
1953	—	5,481	2,000	—	2,017	9,552	29,554	28,292
1954	—	1,307	1,446	—	2,550	5,303	22,025	31,336
1955	20	614	600	—	838	2,072	21,790	34,654
1956	100	—	400	—	632	1,132	34,602	39,942
1957	44	—	972	—	384	1,400	34,919	37,646
1958	92	—	1,416	—	383	1,891	42,136	45,195
1959	100	—	5,260	—	211	5,571	45,475	50,166
1960	110	—	3,755	—	612	4,477	44,380	49,704
1961	100	2,425	609	—	1,720	4,854	39,747	44,327
1962	96	5,123	1,186	—	2,078	8,483	39,810	41,809
1963	75	—	356	—	2,730	3,161	32,364	36,448
1964	4	—	985	—	1,795	2,784	26,745	36,464
1965	5	—	1,676	—	1,542	3,223	25,015	31,748
1966	9	—	171	—	3,398	3,578	25,699	30,672
1967	2	551	127	—	3,704	4,384	22,322	30,056
1968	31	—	199	—	2,862	3,092	23,807	25,467
1969	28	—	66	—	1,593	1,687	16,966	18,590
1970	—	—	186	2,451	2,698	5,335	26,270	25,515
1971	—	—	153	1,098	2,584	3,835	23,349	19,826
1972	—	58	70	585	1,119	1,832	20,781	20,136
1973	—	—	124	1,387	222	1,733	15,280	16,734
1974	—	30	99	747	2,637	3,513	12,879	14,288
1975	—	2	1,578	3,333	658	5,571	15,196	16,252
1976	—	128	1,572	7,363	2,427	11,490	23,508	22,217
1977	—	90	2,432	6,949	1,040	10,511	18,168	20,094
1978	—	186	2,978	14,529	1,240	18,942	24,061	25,154
1979	—	67	4,242	15,015	1,084	20,408	26,132	24,947
1980	—	120	5,791	10,010	1,280	17,201	22,043	21,118
1981	—	22	6,911	4,067	2,071	13,071	16,869	16,105
1982	—	18	8,825	18,216	1,410	28,469	30,966	24,009
Totals	816	17,422	56,185	85,750	54,316	214,552	**835,893**	918,282

[1] Includes Y-LT planting.

Table 9. —The Y-LT planting record by counties, 1948 to 1982

County	Number of trees (M)	Net acres planted
Benton	21,616	19,415
Calhoun	36,126	36,915
Carroll	69,689	57,703
Chickasaw	10,564	11,308
DeSoto	17,599	12,321
Grenada	29,645	28,725
Holmes	62,951	46,455
LaFayette	101,182	86,344
Marshall	115,029	91,246
Montgomery	23,805	22,413
Panola	56,029	42,383
Pontotoc	18,220	16,805
Tallahatchie	27,446	19,501
Tate	23,854	16,214
Tippah	22,319	19,066
Union	25,445	23,072
Webster	12,539	13,074
Yalobusha	57,696	51,957
Yazoo	7,480	6,424
Total	739,234	621,341

Table 10.—Some cost and production data

Year	Contract planting cost per M	Force account planting cost per M[1]	Wage rates, force account planters, per hour	Trees planted per man day	Trees planted per acre	HSI costs per acre[2]
1948-52	NA	NA	NA	NA	NA	NA
53	$9.21	—	$0.75	—	1,355	—
54	8.64	10.38	0.75	—	1,519	—
55	7.82	10.09	0.82	—	1,339	—
56	8.13	9.22	0.83	—	1,096	—
57	NA	10.19	1.06	—	954	—
1958	NA	9.19	1.06	—	942	—
59	11.16	8.83	1.06	—	953	—
60	8.87	8.51	1.06	—	975	—
61	10.48	8.67	1.06	1,115	892	—
62	10.20	10.33	1.19	—	936	—
63	11.54	10.66	1.29	—	916	—
64	11.20	11.08	1.34	—	950	—
65	11.78	11.23	1.43	—	882	—
66	12.91	11.87	1.55	—	850	—
67	—	12.39	1.60	—	906	$10.25
1968	—	13.00	1.80	—	878	10.26
69	—	13.64	2.05	1,292	844	10.82
70	—	12.16	2.18	1,284	832	11.89E
71	—	15.72	2.42	1,313	833	15.84
72	—	14.97	2.63	1,295	836	NA
73	—	21.38	2.75	1,141	855	25.14
74	—	24.32	3.10	1,090	895	23.79
75	—	26.10	3.32	1,083	910	26.76
76	—	26.43	3.75	1,136	939	28.21
77	—	29.07	4.04	1,128	971	30.42
1978	—	30.74	4.37	1,135	968	—
79	—	33.53	4.44	1,132	954	—
80	—	38.97	4.68	1,122	969	—
81	—	42.99	5.38	1,098	1,047	—
82	—	49.29	5.63	1,088	962	—

[1] Labor, supervision, and equipment operation
[2] Labor, supervision, herbicide and equipment operation
NA = Not Available
E = Estimated from numbers available

Table 11. —ACP and REAP[1] accomplishments, calendar years 1948 to 1972; totals for all counties in Y-LT Watershed

Year	Payments for all practices ($)	Planting assistance			TSI assistance			Total assistance for forestry practices ($)	% of total allocation used for forestry practices
		Dollars	No. acres	No. farms	Dollars	No. acres	No. farms		
1948	847,931	11,692	1,949	410	215	43	14	11,907	1.4
1949	1,847,971	13,689	1,658	617	620	124	12	14,309	0.7
1950	2,108,973	41,760	5,187	1,024	2,075	415	15	43,835	2.0
1951	1,999,213	41,100	5,509	895	1,340	268	9	42,440	2.0
1952	1,987,717	106,330	15,185	1,384	3,895	779	33	110,225	5.5
1953	909,561	34,715	7,112	484	2,317	464	26	37,032	4.1
1954	1,259,834	99,346	12,580	1,001	12,901	3,279	91	112,247	8.9
1955	1,683,682	156,725	24,027	1,260	25,051	5,592	148	181,776	10.8
1956	1,774,195	116,502	15,643	1,067	68,247	12,125	353	184,749	10.4
1957	1,824,271	170,112	22,378	1,315	97,096	13,779	614	267,208	14.6
1958	1,716,472	154,327	25,327	1,357	150,478	25,645	912	304,805	17.8
1959	1,780,662	153,573	25,241	1,362	129,852	20,560	754	283,425	15.9
1960	1,770,997	142,501	22,992	1,371	78,831	13,567	675	221,332	12.5
1961	1,774,270	117,792	19,212	1,328	74,515	12,496	653	192,307	10.8
1962	1,727,558	83,606	13,246	1,085	54,082	8,880	540	137,688	8.0
1963	1,741,344	58,031	9,360	800	49,250	7,312	435	107,281	6.2
1964	1,716,582	52,804	8,602	627	39,924	5,924	359	92,728	5.4
1965	1,867,364	30,750	4,684	365	24,997	3,594	258	55,747	3.0
1966	1,728,540	32,784	4,807	390	23,972	3,467	239	56,756	3.3
1967	1,623,302	23,342	3,012	268	19,643	2,538	188	42,985	2.6
1968	1,528,718	29,183	3,268	319	26,553	2,452	234	55,707	3.6
1969	1,499,966	23,495	2,718	238	17,765	1,739	138	41,260	2.8
1970	1,305,399	30,191	2,750	264	16,030	1,554	129	46,221	3.5
1971	1,200,516	27,095	2,362	213	24,075	2,457	183	51,583	4.3
1972	1,455,454	22,261	1,615	156	25,770	1,643	254	48,031	3.3
Total	**40,680,492**	**1,773,706**	**260,424**	**19,600**	**969,494**	**150,696**	**7,266**	**2,743,584**	**6.5**

[1]The ACP was renamed the Rural Environmental Assistance Program (REAP) for the years of 1972 and 1973.

Appendix 2

Foreign Visitors, Personnel Training and Staffing

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3. Pakistan
4. Turkey
5. Sweden
6. Guatemala
7. Nicaragua
8. Korea
9. Germany
10. Nepal
11. Brazil
12. Thailand
13. New Zealand
14. Japan
15. Surinam
16. Jamaica
17. Taiwan
18. Philippines
19. Panama
20. Bolivia
21. Rhodesia
22. Iraq
23. Mozambique
24. Vietnam
25. South Africa
26. Cambodia
27. Greece
28. Kenya
29. Spain
30. France
31. Belgium
32. Israel
33. Scotland
34. Uruguay
35. Yugoslavia
36. Chile
37. Columbia
38. Iran
39. Australia
40. Tunisia
41. Formosa
42. North Africa
43. England
44. Argentina

Training Provided to Y-LT Staff

Technical Training Courses for Field Operations

Planting School
Timber Stand Improvement
Fire School
Hardwood Management School
Hydrology Workshop
SCS Farm Planting Workshop
National Soil and Water Conservation Needs Workshop
Timber Marking
Pulpwood Marking
Soils
Forest Mapping
Multiple Use
Site Preparation
Tree Improvement
Managing for Fence Posts
Christmas Tree Growing
Environment and Ecology Planning
Compartment Prescription
The Fire Crew Boss
Ecological Approach to Resource Management
Earth Science Workshop
Insect and Disease Identification and Control
Sampling Techniques and Timber Inventory Systems
Utilization and Marketing
Forest Management Techniques
Fire Simulator School
Prescribed Burning
Pine-Hardwood Management
Specialized Forest Management Techniques
Fire Prevention Contactor Training
Forestry Appraisals
Plantation Harvesting Conference
Marketing Survey School
Watershed Planning Workshop
Forest Finance
Fire Behavior
Fire Management Environmental Workshop
Erosion Control and Revegetation for Surface Mining
Forest Practices and Water Resources
Harvesting and Marketing Private Non-industrial Timber
Information analysis for Forest Resource Management
Principles of Economics
Measuring Forest Resources

Communications Courses

Public Speaking and Public Relations
Small Watershed Report Procedures and Writing
Instructor Training
Leading Group Meetings
Talking with People
Berlo-Drucker Film Series
Oral Communications
Information and Education Workshop
Dale Carnegie Course
Better Letter Writing
Counseling: Role Playing
Toastmasters
Civil Service Technical Writing Course
Writing Effective Letters
Basic Communication

Personnel Management Courses

Beyond Success and Failure
Equal Employment Opportunity
Civil Rights Training
Job Profile and Performance Rating
Employee Responsibility and Conduct
Supervisory and Group Performance
Advanced EEO Counseling
Basic Position Classification
Safety and Health Inspector Training
Federal Women's Program Coordination Workshop
Introduction of Job Control Language
Effective Productivity Training
Project Concern Supervisory Training
Employee Benefits
Applied Supervision
Reduction-in-Force

Office Procedures

Overview of Personnel Management
Business Management
MODE Training
Government Contract Law
Small Purchases
Service and Supply Workshop
Basic Procurement
Computer System and Information Concepts for Managers
GSA Procurement Procedures
Clerical Workshop
Fleet Management Workshop
Better Office Skills and Services
Government Payroll/Record Keeping Procedures
Mail Management
Travel Training
Secretarial Training
Directives, Forms, Records and Mail Management
Computer Training

Administrative Management Courses

Labor Management and Employee Relations
Kepner-Tregoe (Decision Making)
Problem Solving (Harless)
Administrative Management (Drucker)
Seminar in Executive Development
Seminar in Middle Management
Supervisory and Managerial Strategies
Congressional Operations Seminar for Managers
Managerial Grid
Problem Solving and Decision Making
Management for Natural Resource Managers
Facilitators Workshop
Management by Objectives
Public Administration
Program Evaluation

Courses in Job-related Skills

First Aid
Defensive Driving
Chain Saw Operation
Survival Preparedness for Rural Areas
Equipment Management
Civil Service Road Test Examiners School
Fire Equipment Use School
Foremanship II

Project Personnel, 1948 to 1985

Project Managers

Larry Newcomb	1948-51
Ivo Miller	1951-52
Victor B. MacNaughton	1952-67
James H. Wells	1967-70
James R. Crouch	1971-76
Charles R. Myers	1976-82
John F. Arrechea	1982-85

Assistant Project Managers

Frank Mayfield	1948-50
Don Gerred	1950-62
Sterling Weaver	1962-66
Hamlin L. Williston	1967-71
Billy E. Page	1971-75

Timber Management Forester

Bert Cox	1962-69
Billy E. Page	1971-75
Bruce L. Baldwin	1976-80

Watershed Planner Forester

Stanley J. Ursic	1954-55
Robert Baker	1955-57
C. Allen Friedrick	1957
Edward Howell	1957-69
Norman W. Runge	1971-74
Michael T. Rains	1975-76
John F. Arrechea	1977-82

Fire Control Forester

A. B. Curtis	1962-64
Hollis Ishee	1964-66

I & E Officer

A. B. Curtis	1969-72
Charles R. Myers	1973-76
Charles Shade	1980-84

Utilization Forester

Plato Touliatos	1964-70

Administrative Officer

James Tucker	1964-73
Robert Hightower	1973-74
Kenneth Robertson	1975-76
Vernon Vire	1977-84

Project Manager's Office Support Staff[1]

NAME	POSITION	DATE OF TENURE
Mary Arrington	Clerk Typist/Accounting	1973-77
Janet Bethany	Personnel/I & E	1962-79
Henry Campbell	Clerk	1952-53
Britt Cain	Clerk/Typist	1961-67
Brenda Catania	Clerk/Typist	1967-71
John Champion	Purchasing Agent	1964-68
Carolyn Chesteen	Clerk/Typist	1977-78
Shu-Mei Chin	Accounting Technician	1977-78
Sherry Christ	Purchasing Agent, Accounting Technician	1976-85
Betty S. Cox	Clerk/Typist	1954
Percy Dorris, Jr.	Forester	1964
Bonnie Downs	Clerk/Typist	1975-76
Charles Gibson	Purchasing Agent	1963-70
Gina Graham	Clerk/Typist	1981-83
M. C. Falkner	Clerk	1954-56
Charles Griffing	Forester	1965
Jason Jordan	Forestry Technician	1960-73
Nancy King	Clerk Typist/Personnel	1976-80
Peter Leavett	Forester	1963-64
Tommy Leeper	Supply Clerk	1963-66
Mary S. McConnell	Clerk/Typist	1962
Cora Sue McCoy	Fiscal Clerk	1958-75
Jo Ann V. McKay	Clerk/Typist	1959-60
Judy Myers	Clerk/Typist	1963
Robert Nelson	Clerk	1950-52
John Henry Pegues	Forestry Technician	1964-85
Sue Rogers	Clerk/Typist	1964
James Rogers	Purchasing Agent	1974-76
John Schombert	Timber Management Specialist	1972-82
Joyce Shirley	Clerk/Typist, Purchasing	1979-83
Bernyce Smith	Accounts Maintenance Clerk	1975-76
Mary C. Speed	Clerk/Typist	1965
Lottie Tatum	Personnel	1956-79
James W. Tucker	Officer Manager	1955-57
Jimmy E. Turner	Clerk/Typist	1952-53
Ivory Walker	Personnel Assistant	1980-83
Max Whitehead	Business Management Assistant	1975-84
Jessie Lee Williams	Property Clerk	1962
Sheila Yarbrough	Clerk/Typist	1983-85

[1] Includes only those working 6 months or more.

List of Project Foresters

Location	Project Forester	Dates of Tenure
Ashland	Ralph H. Kunz	6/54-6/57
	Joseph F. Hudick	10/57-6/60
	Harold E. Green	7/59-6/60
	Timothy M. Smith	6/61-7/62
	Edward M. Curtis	9/62-5/64
	Bernard P. Dickerson	4/64-11/65
	Kenneth Ready	11/65-10/66
	James C. Ouzts	11/66-6/68
Batesville	Merlin J. Dixon	3/54-5/57
	Carl Hoover	7/56-3/58
	James H. Wells	4/58-8/59
	Radford D. Tanksley	8/59-5/66
	Joseph E. Kost	5/68-1/71
	Jack Coleman	3/71-6/72
	Donnie Richardson	6/72-1/75
	Jim Crain	3/76-6/82
Calhoun City	Charles E. Dupre	11/62-6/65
	Thomas O. Smith, III	8/65-9/69
	Joseph P. Wallace	9/69-4/74
	Bruce L. Baldwin	4/74-2/76
Carrollton	Lauren O. Lyon	10/54-3/58
	George J. Paris, Jr.	4/58-10/59
	Harold Green	6/60-6/61
	Joe K. Gillis	6/60-7/63
	Anthony F. Ryan	7/71-12/73
Charleston	Rowland Cowger	7/49-5/51
	Clint Sykes	5/51- 9/52
	Robert Raymond	7/52-10/52
	Harry Jansen	6/53-7/57
	Sterling W. Weaver	1/58-10/59
	George J. Paris, Jr.	11/59-6/61
Coffeeville	Ronald J. Strauss	6/61-6/63
	David A. Page	6/63-8/65
	John F. Arrechea	8/65-7/70
	William S. Baggett	7/70-10/74
	Roger Fithian	10/74-7/76
Grenada	James J. Cann	9/54-7/59
	Carl E. Webb	8/59-6/61
	Harold Green	6/61-10/61
	Jack A. Williams	10/61-8/64
	Norman W. Runge	10/64-7/67
	Joseph E. Kost	11/67-5/68
	Randall N. Schiefer	4/68-9/70
	Ralph P. Yates	9/70-10/72
	Jim Crain	2/73-3/76
	Roger Fithian	7/76-8/78
	Tim Traugott	8/78-9/82
Holly Springs	Lewis J. Smith, Jr.	7/49-5/51

Location	Project Forester	Dates of Tenure
	Irving Marsden	7/52-9/52
	John V. Orr	9/52-8/54
	Tom Swofford	8/54-8/55
	Johnie E. Davis	8/55-8/62
	Timothy M. Smith	7/62-5/63
	Plato Touliatos	7/63-9/64
	Peter D. Leavitt	9/64-5/67
	Quentin P. Mack	5/67-7/68
	Gilbert Massie	6/68-8/70
	Robert A. Raines	8/70-6/72
	Jack Coleman	6/72-6/74
	Robert Harrell	3/75-3/77
	Tim Traugott	6/77-9/78
	John Granger	12/78-4/80
	Leslie Allen	6/80-4/82
Houston	Mark Hopson	7/49-5/51
	Ed Ellenberg	5/51-9/52
	John R. Henry	5/53-11/55
	Robert B. Emery	5/53-8/54
	Richard E. Brown	7/56-4/58
	Joseph J. Dronzek	11/55-10/56
	Walter B. Brooks, Jr.	5/58-8/62
Lexington	Cliff Comfort	7/49-4/50
	Hans Raum	4/50-6/52
	Robert Raymond	7/52-10/52
	William A. Jackson	9/52-4/56
	James C. Froula	4/56-10/56
	Sterling W. Weaver	10/56-2/58
	Vedene H. Smith	7/57-7/58
	Edmond I. Swensen	7/58-5/60
	James E. Bylsma	9/60-7/62
	O. D. Smith, Jr.	9/62-7/65
	Donald W. Ashworth	6/65-9/67
	Julian C. Freeman	9/67-8/71
	Anthony F. Ryan	11/71-12/73
	Marty Howard	3/74-3/77
	Wes Harvey	5/77-5/80
New Albany	James P. Hutchins	7/49-9/49
	Walter Seagle	10/49-5/51
	John Courtenay	5/51-9/52
	Leslie P. Yates	9/52-4/54
	James R. Padgett	4/54-6/56
	James H. Wells	6/56-4/58
	Carl E. Webb	3/58-8/59
	George L. Pace	8/59-3/61
	John T. Burrows, Jr.	5/61-7/63
	Roy J. Smith	5/63-6/66
	Quentin Mack	7/66-5/67
	Gilbert Massie	6/67-6/68
	J. Lee Bardwell	6/68-7/71
Oxford	Brooke Davis	2/48-4/50
	Robert Pearl	5/51-9/52
	Robert Baker	9/52-11/54
	George A. Wolfel	11/54-7/56

Location	Project Forester	Dates of Tenure
	John D. Schombert	7/56-7/72
	John F. Arrechea	8/72-2/77
	Larry M. Bishop	6/77-10/78
	Gary Yeck	1/79-4/82
Pontotoc	James J. Cann	7/49-9/52
	Lewis Long	9/52-9/56
	Radford D. Tanksley	8/57-8/59
	John T. Burrows, Jr.	8/59-5/61
Ripley	Fred Joy	7/49-7/53
	Walter Guerrero	7/53-9/55
	Harry R. Garrett	9/55-4/58
	George L. Pace	5/58-8/59
Sardis	Leonard J. Moore	7/49-5/51
	William H. Arlen	5/51-9/52
	Walter Fox, Jr.	9/52-4/54
Senatobia	Ted Eldredge	7/49-5/51
	Scott Harrison	5/51-7/54
	Carl Hoover	7/54-6/56
	Harry Sontag	6/56-5/58
	William E. Bustin	5/58-6/60
	John L. Lester	6/60-9/60
	John B. White	10/60-8/63
	Charles E. Gresham	9/63-11/66
	William J. Palmer	10/65-7/68
Winona	Harold Bergman	7/49-5/51
	Robert Harper	5/51-9/52
	Robert B. Emery	9/52-5/58
	Richard E. Brown	8/54-7/56
	Joe K. Gillis	7/63-9/65
	Rives B. Lowrey	10/65-6/69
	Anthony F. Ryan	7/69-7/71

Project Forester Support Staff

Name	Position	Location	Date of Tenure
Jack Allred	Forestry Technician	Winona Carrollton	1963-82
Marion Baker	Forestry Technician	Charleston Coffeeville	1958-78
Billy J. Beckett	Forestry Aid	Oxford	1960
Alex Boldog	Forester	Lexington	1977-80
Chad Boniface	Forester	Senatobia	1980-83
Joe Carson	Forestry Technician	Winona Carrollton	1955-84
Lamar Carson	Forestry Technician	Winona	1954-67
Orland Carvan	Forestry Technician	Charleston Coffeeville	1954-73
Fred Clayton	Forestry Technician	Holly Springs	1962-84
Pat Collins	Forester	Coffeeville	1980-81
Lynn D. Corbitt	Forestry Technician	Calhoun City	1977-84
Wilborn Crouch	Forestry Technician	Batesville	1956-75

Name	Position	Location	Date of Tenure
Percy Dorris	Forestry Technician	Holly Springs	1956-71
Jack Ferguson	Forestry Technician	Charleston	1956-76
		Coffeeville	
Joe Fowler	Forestry Technician	Carrollton	1975-80
	Forester	Oxford	
Julian Freeman	Forestry Technician	Lexington	1964-67
Glen Gaines	Forester	Batesville	1981-82
Albert Goforth	Forestry Technician	Batesville	1975-80
Peggy Gooch	Clerk/Typist	Batesville	1973-82
Robert Haggard	Forester	Carrollton	1975-78
Frank Hammond	Forester	Lexington	1980-81
Diane Harlow	Clerk Typist	Grenada	1980-82
Dennis Heidbreder	Forester	Coffeeville	1979-81
Donna Holland	Clerk/Typist	Grenada	1976-81
		Oxford	
Shelia Howard	Clerk/Typist	Oxford	1981-82
Ricky Hyde	Forestry Technician	Oxford	1972-82
Jessie James III	Forestry Technician	Grenada	1973-75
	Forester	Holly Springs	1975-76
Jessie Jamison	Forestry Technician	Senatobia	1958-76
Austin Jenkins	Forestry Technician	Holly Springs	1970-82
L. B. Johnson	Forestry Technician	Lexington	1957-81
Woodrow Jordan	Forestry Technician	Ashland	1954-77
Susie Koph	Clerk/Typist	Grenada	1977-80
Robert Langston	Forestry Technician	Calhoun City	1959-72
James L. McCarver	Forestry Technician	Pontotoc	1957-82
Felix Mills	Forestry Technician	Oxford	1954-79
		Batesville	
Noel Mills	Forestry Technician	Batesville	1956-76
Tom Monaghan	Forester	Coffeeville	1975-76
James Myers	Forester	Ashland	1978-79
Johnnie Pace	Clerk/Typist	Lexington	1978-80
Bruce Padian	Forester	Calhoun City	1975-77
John Pierce	Forestry Aid	Lexington	1959-71
Stanley Pulliam	Forestry Technician	Houston	1956-61
Lew Purcell	Forestry Technician	Senatobia	1977-78
	Forester	Senatobia	1978-80
Steve Rakestraw	Forestry Technician	Ripley	1954-82
Ronald Ramage	Forestry Technician	Calhoun City	1972-85
Jack Renfrow	Forestry Technician	Oxford	1958-85
Evelyn Robinson	Clerk/Typist	Holly Springs	1974-82
John Romanowski	Forester	Grenada	1978-81
Joe Rose	Forestry Technician	Grenada	1954-76
Troy Samples	Forestry Technician	Holly Springs	1954-84
Tom Skelton	Forester	Batesville	1979-82
Aubrey Smith	Forestry Technician	Carrollton	1961-76
David Smith	Forester	Coffeeville	1976-80
Don Tornczak	Forester	Carrollton	1978-83
Tim Traugott	Forestry Technician	Lexington	1972-73
	Forester	Lexington	1973-75
	IPA Forester	Grenada	1982-85
Mark Webb	Forestry Technician	Calhoun City	1972-73
	Forester	Calhoun City	1973-75
Tony White	Forester	Grenada	1981-82
Mose Wigley	Forestry Technician	Lexington	1959-84
Floy Williams	Forestry Technician	New Albany	1956-73

The Forest Service, U. S. Department of Agriculture, is responsible for Federal leadership in forestry. It carries out this role through four main activities:

- Protection and management of resources on 191 million acres of National Forest System lands.
- Cooperation with State and local governments, forest industries, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands.
- Participation with other agencies in human resource and community assistance programs to improve living conditions in rural areas.
- Research on all aspects of forestry, rangeland management, and forest resources utilization.

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